H. CRUTCHLEY.

TYPE WRITING MACHINE.

APPLICATION FILED JUNE 11, 1910.

1,067,645.

Patented July 15, 1913.

2 SHEETS—SHEET 1.

Fig. 1

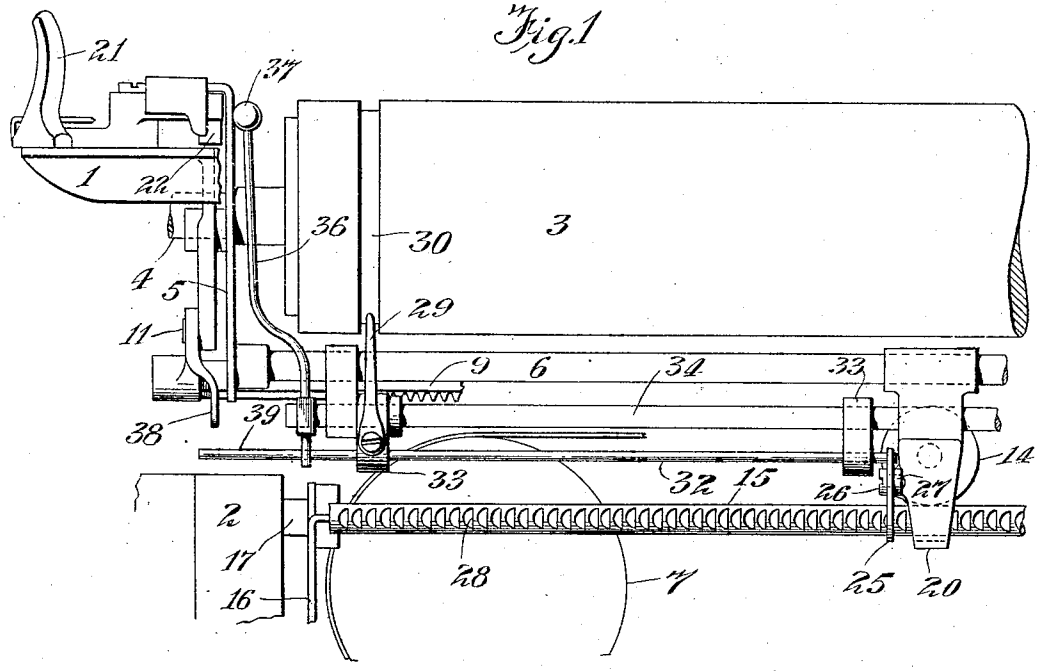
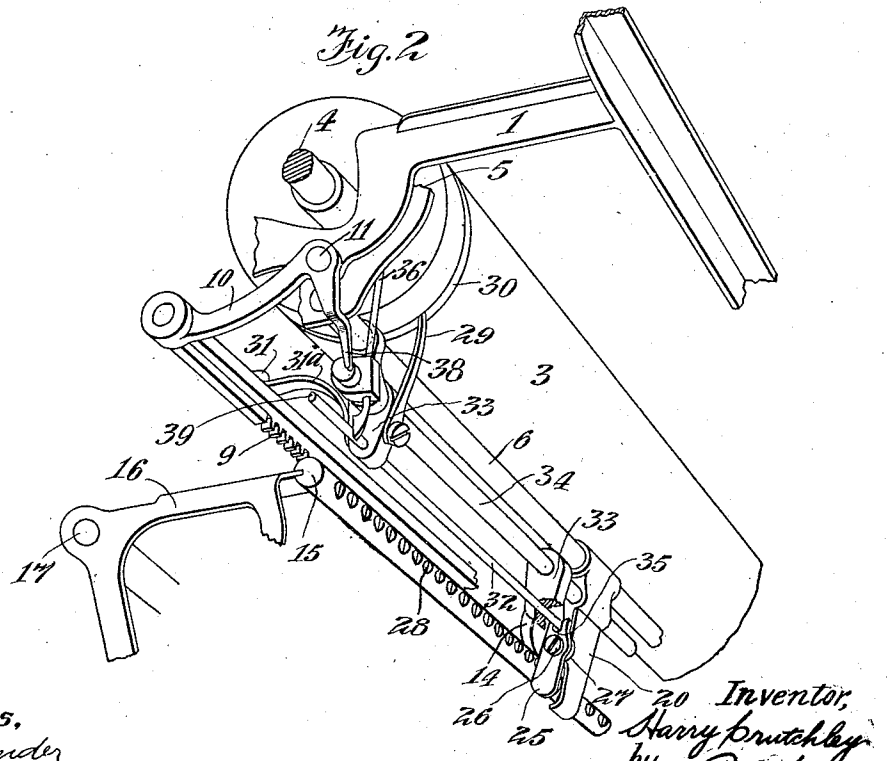


Fig. 2



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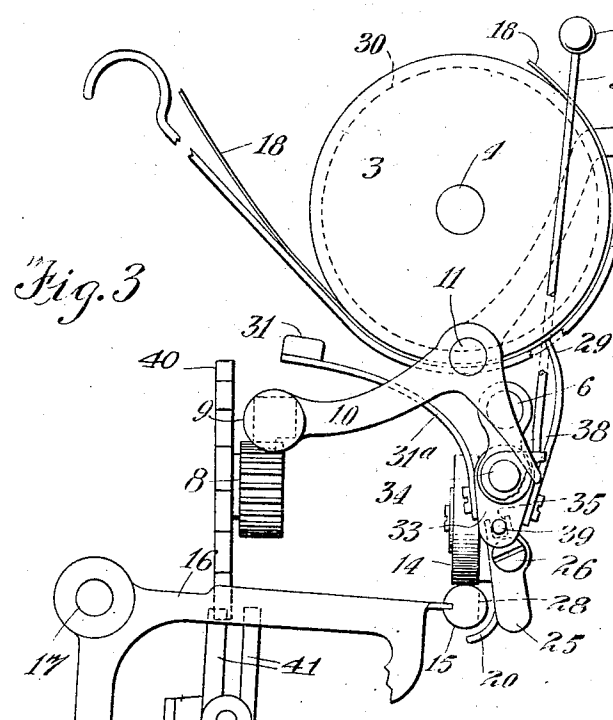


Fig. 3

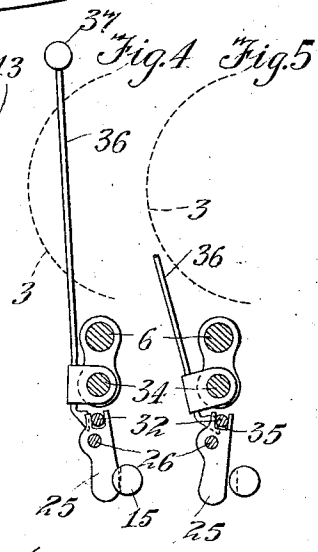


Fig. 4

Fig. 5

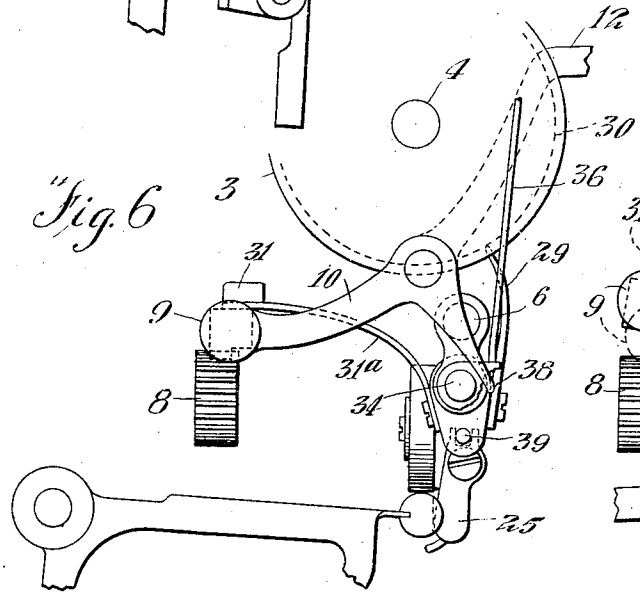


Fig. 6

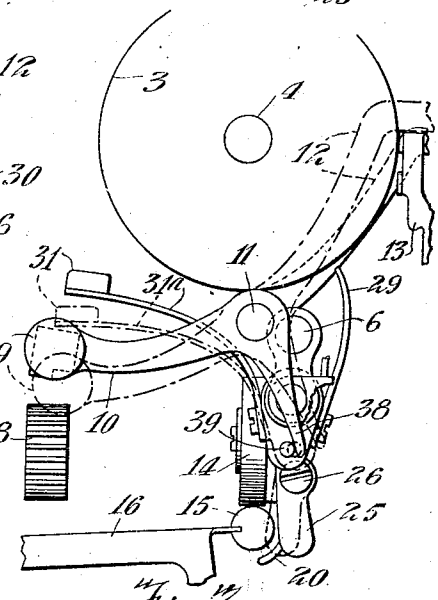


Fig. 7

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UNITED STATES PATENT OFFICE.

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TYPE-WRITING MACHINE.

1,067,645. Specification of Letters Patent. Patented July 15, 1913.

Application filed June 11, 1910. Serial No. 566,283.

To all whom it may concern:

Be it known that I, HARRY CRUTCHLEY, a citizen of the United States, residing in Jersey City, in the county of Hudson and State of New Jersey, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

The main object of this invention is to provide improved and simplified mechanism for indicating that the lower edge of the work sheet has nearly reached the printing line.

A latch on the paper carriage is connected with a paper-controlled trip and operates to automatically lock the carriage against its return to the beginning of a new line of writing, whenever the bottom edge of the work sheet has advanced past the trip.

Other features and advantages will hereinafter appear.

In the accompanying drawings, Figure 1 is a front elevation, showing one embodiment of the invention applied to an Underwood writing machine. Fig. 2 is a perspective view, parts being broken away, showing the lock in effective position. Fig. 3 is an end view, showing the latch released by the paper to free the carriage. Fig. 4 is a detail sectional view, showing the releasing lever for the locking mechanism in inoperative position. Fig. 5 is a similar view, showing the releasing lever in operative position. Fig. 6 is a view similar to Fig. 3, showing the latch locking the carriage against return to the beginning of a line, the platen being in normal position. Fig. 7 is a similar view, showing the platen in full lines shifted to upper case position, full lines indicating the position of the parts when the letter-spacing rack lever is operated to release the latch from the shift rail, the dotted lines showing the locked positions of the parts.

A carriage 1, movable back and forth on the frame 2 of an Underwood writing machine, supports a platen 3 journaled by an axle 4 in platen frame ends 5, which are connected by a tie rod 6. Said carriage is drawn in letter-spacing direction by a spring 7, and is fed step-by-step by an escapement mechanism including a pinion 8 in mesh with a letter-spacing rack 9 carried by arms 10, pivotally mounted at 11 upon the carriage. The pinion 8 in feeding turns with an escapement wheel 40, which is controlled by dogs 41 operated by the type through a universal bar not shown. The depression of a finger lever 12 releases the rack 9 from its pinion 8.

The platen frame is loosely mounted on the carriage and has a roll 14 to ride upon a shift rail 15 carried by elbow levers 16 pivoted at 17, said levers, when operated by the usual shift key (not shown), being effective to shift the platen frame relatively to the carriage 1, to enable the upper case characters on the type bars 13 (see Fig. 7) to strike against the platen. Said platen frame has a hook 20 depending from the tie rod 6 and curving beneath the shift rail 15. A lever 21 operates a slide 22, to turn the platen 3. When the carriage 1 reaches the end of a line of writing, the lever 21 is operated to advance the sheet to the next line, the carriage being returned by the same movement, to the beginning of the next line.

To indicate when the lower edge of the work sheet has approached nearly to the printing point, I contrive to prevent the return of the carriage to the beginning of a line, by employing a dog or latch 25 pivoted at 26, (preferably to an ear 27 on the hook 20), to engage a row of teeth 28 formed on the shift rail 15, and constituting a rack. Said dog is controlled by a swinging finger or trip 29, connected with the dog by a rod 32. Said finger normally occupies a circumferential groove 30 in the platen. The leading edge of the work sheet 18, when inserted and carried around the platen, contacts with the free end of the finger 29 and crowds it out of the groove; such movement of the finger being transmitted to the dog 25 to rock it to idle position, where it is maintained as long as the work sheet intervenes between the groove and the finger or trip (Fig. 3).

The groove 30 is formed near one end of the platen, but the dog 25 is located substantially centrally of the platen frame, to accommodate the position the rack 28 on the usual rail 15, the dog being hence effective at any point in the travel of the carriage. The rod or bail 32, fixed in hangers 33 swinging upon the fixed shaft 34, connects the finger 29 and dog 25, the dog being slotted, as at 35, to accommodate the end of said connecting rod. The finger and dog are preferably mounted in front of the shift

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rail 15, and both rock rearwardly to lock the carriage. The finger 29 is fast to a hanger 33. The dog is supported independently of the remainder of the line-indicating mechanism, whereby to relieve said mechanism from strain when it is attempted to return the carriage to the beginning of a line after the latch 25 has made contact with the rack 28.

Assuming that the carriage has reached the end of its letter-spacing movement, and that the bottom edge of the work sheet is adjacent the finger or trip 29, the operator employs the line space lever 21 to advance the paper and also to return the carriage to the beginning of a line. The lever, however, in turning the platen, causes the bottom edge of the work sheet to pass the trip 29, whereupon a counterweight 31 (on arm 31ª fixed to a hanger 33) automatically causes the free end of the trip to fall into the groove 30, and swings the rod 32 to set the dog 25 into the rack 28, thereby locking the carriage against a return to the beginning of a new line, (Fig. 6). The arrest of the carriage notifies the operator that the work sheet is nearly used up.

In case it is desired to add one or more lines upon the sheet, the operator can return the carriage to the beginning of a line by depressing the carriage-releasing lever 12, which swings the letter-spacing rack 9 out of engagement with the escapement pinion 8. This raises the arm 31ª, (said arm having dropped upon the space rack 9, when the trip 29 entered groove 30), and swings rod 32 to disengage the dog 25 from the rack 28, and release the carriage for return movement.

The shifting of the platen to upper case position (Fig. 7), shifts the arm 31ª away from the letter-spacing rack 9, (see dotted lines, Fig. 7). To release the latch when the platen is in upper-case position, one of the rack-supporting arms 10 is provided with an arm 38, which, when the rack 9 is lifted, strikes a releasing finger 39, consisting of an extension of rod 32; said releasing finger being moved into the path of said rocker arm 38 when the platen is shifted. The rocker arm causes the connecting rod 32 to swing far enough to free the dog 25 from rack 28.

The line-indicating mechanism may be held inoperative, whenever desired, by a lever 36, journaled on support 34 to strike rod 32 and swing the latter to turn the latch to idle position (see Fig. 5). The lever may be frictionally held in effective position, by forming it of resilient material and providing thereon a head 37 to bear against one of the platen frame ends 5, (Fig. 1).

Since the strain placed on the carriage when attempting to return it to the beginning of a line is sustained by the independently supported dog 25, the other parts of the device need not be made strong and heavy, and the necessity is avoided of employing a heavy counterweight or spring to actuate the trip. By mounting the dog on the shiftable platen frame and arranging that it shall engage the shift rail 15, the carriage may be locked when the platen is in either upper or lower case position.

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:

1. In a typewriting machine, the combination with a frame, a carriage traveling back and forth thereon, a platen frame comprising a platen mounted on the carriage and means to raise and lower the platen, of a latch effective to lock the carriage against return movement by engagement with a rack shifting with the platen irrespective of the position of the platen, and a paper-controlled trip connected with the latch to hold it idle until the bottom edge of the work sheet passes said trip.

2. In a typewriting machine, the combination with a frame, a carriage riding back and forth thereon, a platen frame mounted on and shiftable relatively to the carriage, a platen in the platen frame, and platen-shifting means including a shift rail, of a latch on the platen frame, a rack on the shift rail engaged by the latch to lock the carriage against return movement, irrespective of the position of the platen frame, and a paper-controlled trip connected with the latch.

3. In a typewriting machine, the combination with a frame, a carriage traveling thereon, an escapement on the frame, a space rack on the carriage engaging the escapement to feed the carriage in letter-spacing direction, and a finger piece to release the rack from the escapement, of a latch to lock the carriage against return movement, a paper controlled trip connected with the latch to operate the latter, and an arm lying in the path of release movement of the space rack when the latch is in operative position to effect the release of the latch when the rack is released from its escapement.

4. In a typewriting machine, the combination with a frame, a carriage traveling thereon, escapement mechanism including a space rack on the carriage to releasably engage a pinion on the frame, and means to release the rack from the pinion, of a latch to lock the carriage against return movement, a paper-controlled trip connected with the latch to operate the latter, and means operated by the release of the space rack to throw the latch to idle position to permit the return of the carriage.

5. In a typewriting machine, the combination with a frame, a carriage to travel

back and forth thereon, and an escapement, of a paper-controlled lock to prevent return movement of the carriage, a finger piece to release the carriage from its escapement, and means actuated by the operation of the finger piece to move the lock to idle position to permit the carriage to return to the beginning of a line.

6. In a typewriting machine, the combination with a frame, a carriage to travel back and forth thereon, mechanism to feed the carriage step-by-step including a rack on the carriage releasably engaging a pinion on the frame, a shiftable platen frame comprising a platen mounted on the carriage, means to shift the platen, of a paper-controlled latch carried by the platen frame to lock the carriage against return movement, a finger piece to release the letter-spacing rack from the escapement pinion, a rocker arm connected to be operated with the rack, and a releasing finger connected with the latch to be brought into the path of the rocker arm when the platen is in one of its positions, to effect the release of the latch when the letter-spacing rack is released from its pinion.

7. In a typewriting machine, the combination with a frame, a carriage movable back and forth thereon, an escapement mechanism, means disengageably connecting the carriage with said escapement mechanism, a platen frame comprising a platen on the carriage, and means to shift the platen frame, of a paper-controlled lock to prevent return movement of the carriage when the lower edge of a sheet nears the printing line, and a lock-releasing device rendered operative when the platen is in one of its positions, to release the lock upon the disengagement of the carriage and its escapement mechanism.

8. In a typewriting machine, the combination with a frame, a carriage thereon, a platen frame comprising a platen on the carriage, the platen frame and platen being movable to different case-shift positions, and an escapement including a letter-spacing rack on the carriage meshing with a pinion on the frame, of an indicating mechanism comprising a latch connected with the platen frame, and constantly tending to interlock with a rack associated with the frame, a trip lying in the path of the work sheet and connected with the latch to hold it idle while the sheet remains in contact with the trip, an arm connected with the latch and operated by the release of the letter-spacing rack from the pinion, when the platen is in one of its case-shift positions, to disengage the latch from its rack, a releasing finger connected with the latch and brought into the path of a rocker arm connected with said letter-spacing rack to free the latch when the platen frame is in the other of its case-shift positions, and a lever to hold the latch out of use.

9. In a typewriting machine, the combination with a platen, a carriage, and a letter-feeding mechanism, of an automatic latch dependent upon the work sheet for locking the carriage against return movement, and a key having means to release said carriage from both said letter-feeding mechanism and said latch.

10. In a typewriting machine, the combination with a platen, a carriage, letter-feeding mechanism, and a carriage-releasing mechanism including a finger-piece, of platen-rotating mechanism for line-feeding the work sheet, means controlled by the advance of the work sheet by said platen-rotating mechanism to lock the carriage after the line feeding has proceeded to the desired extent, and means connected to said finger-piece to release the carriage from said locking means.

11. In a typewriting machine, the combination with a platen, means to shift the same, and means to effect letter-feeding movement of said platen, of means for effecting line-spacing movement of the platen to advance a work sheet, means controlled by the advance of said work sheet by said line-spacing means, in either position to which the platen is shifted, for locking the platen against returning to begin a new line of writing, means, including a finger-piece, for releasing the platen from the control of said letter-feeding means, and means connected to said finger piece for releasing the platen from the control of said lock.

12. In a typewriting machine, the combination with a platen and a platen shift frame, of a rail for shifting said platen and frame, a wheel supporting said platen frame traveling on said rail, a rack on said rail, a latch closely adjacent said wheel and adapted to engage the said rack for locking said platen against travel, and means to operate said latch.

13. In a typewriting machine, the combination with a platen and a platen shift frame, of a rail for shifting said platen and frame, a wheel supporting said platen frame traveling on said rail, a rack on said rail, a locking latch closely adjacent said wheel and movable into engagement with the rack for locking said platen against travel, and a handle for operating said latch at one end of the platen.

14. In a typewriting machine, the combination with a frame and a platen carriage moving back and forth thereon, of a rack extending along the carriage, a latch mounted intermediate the ends of the carriage operable at any point in the travel of the carriage to engage said rack to lock the carriage against return movement, a rocking paper-controlled trip located near one end

of the carriage, a rod extending along the platen and connected to rock with the trip and having a loose connection with the latch, and means tending to rock the trip and latch to effective positions.

15. In a typewriting machine, the combination with a frame, a carriage movable back and forth thereon, an escapement mechanism, means disengageably connecting the carriage with said escapement mechanism, and a platen frame comprising a platen on the carriage and shiftable to different case positions, of a paper-controlled lock to prevent return movement of the carriage when the lower edge of a sheet nears the printing line, a device operative only when the platen frame is shifted to one of its case-shift positions, to release the lock upon the disengagement of the carriage from its escapement mechanism, and a releasing arm connected with the lock and operated at the disengagement of the carriage from its escapement when the platen frame is in the other of its case-shift positions.

16. In a typewriting machine, the combination with a frame, a carriage movable back and forth thereon, an escapement pinion, means disengageably connecting the carriage with said escapement pinion, and a case-shifting platen frame comprising a platen and mounted on the carriage, of a paper-controlled lock to prevent return movement of the carriage when the lower edge of a sheet nears the printing line, and devices operable by the disengagement of the carriage from its escapement, to release the lock when the platen and platen frame are in either of their case-shift positions.

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