H. RESCH.

TYPEWRITING MACHINE.

APPLICATION FILED JUNE 2, 1920.

1,419,172.

Patented June 13, 1922.

2 SHEETS—SHEET 1.

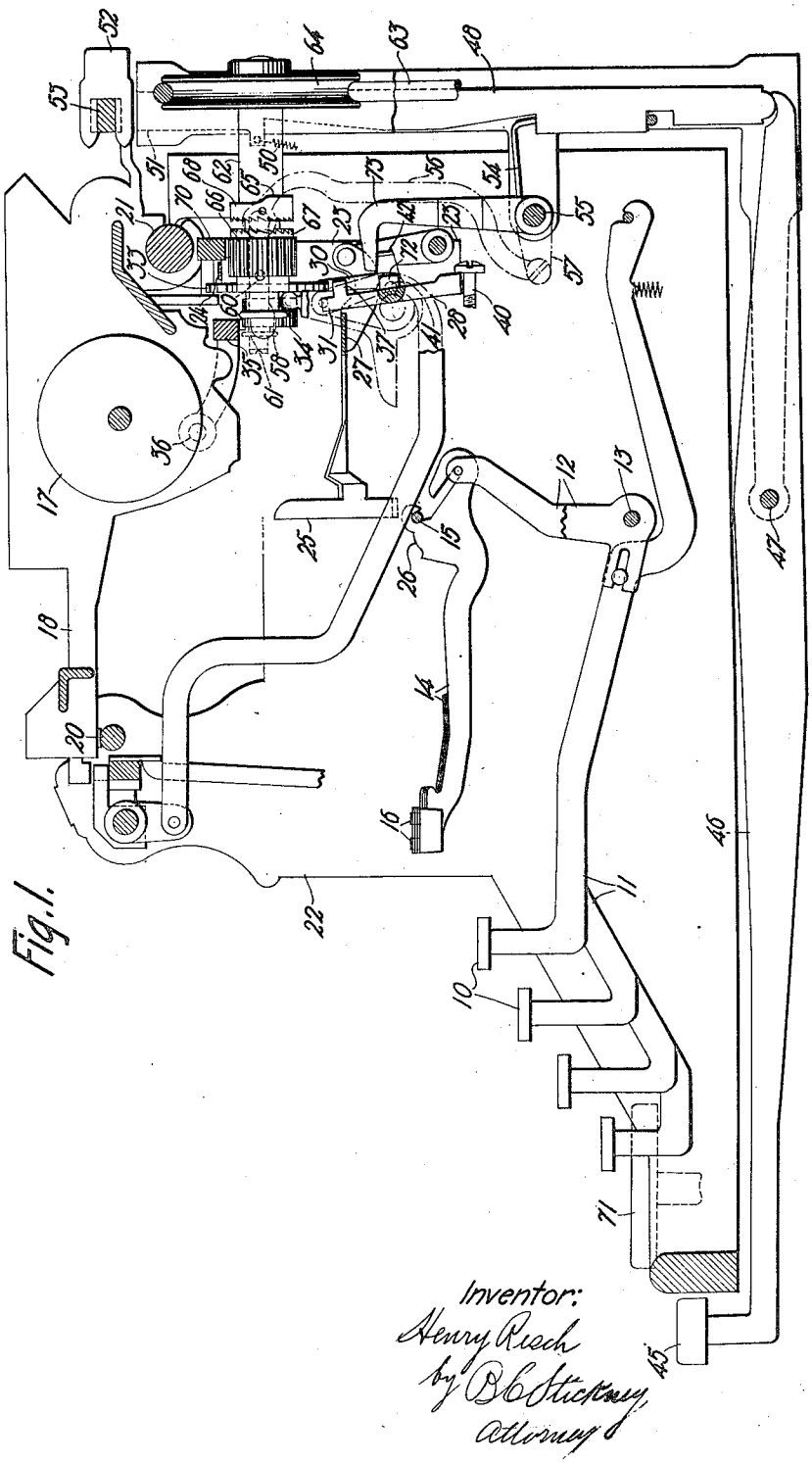


Fig. 1.

Inventor:
Henry Resch
by B. C. Stickney,
Attorney

H. RESCH.

TYPEWRITING MACHINE.

APPLICATION FILED JUNE 2, 1920.

1,419,172.

Patented June 13, 1922.

2 SHEETS—SHEET 2.

Fig. 3.

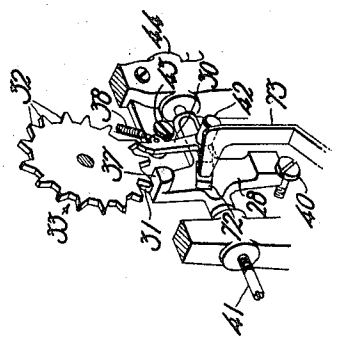


Fig. 4.

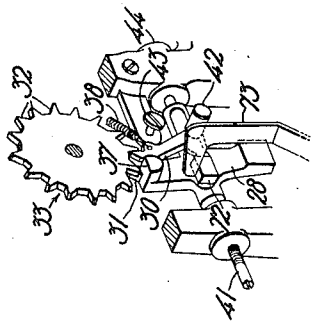
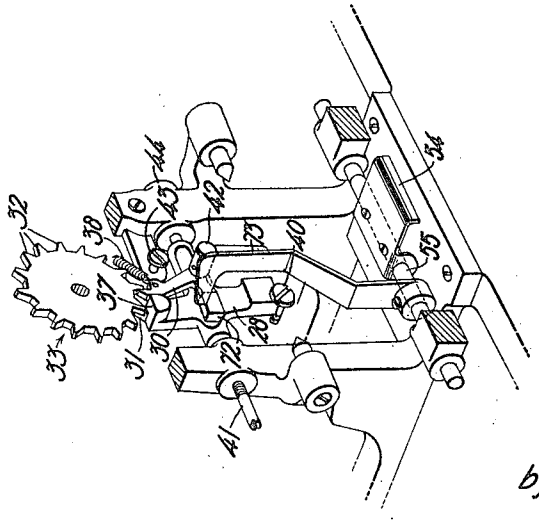


Fig. 2.



Inventor:
Henry Resch
by B. B. Stickney
Attorney

UNITED STATES PATENT OFFICE.

HENRY RESCH, OF BAYONNE, NEW JERSEY, ASSIGNOR TO UNDERWOOD COMPUTING MACHINE COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

TYPEWRITING MACHINE.

1,419,172. Specification of Letters Patent. Patented June 13, 1922.

Application filed June 2, 1920. Serial No. 385,914.

To all whom it may concern:

Be it known that I, HENRY RESCH, a citizen of the United States, residing in Bayonne, in the county of Hudson and State of New Jersey, have invented certain new and useful Improvements in Typewriting Machines, of which the following is a specification.

This invention relates to tabulating mechanism for typewriting machines, and more particularly to means for silencing the tabulating mechanism at certain times.

An object of the invention is to render the tabulating mechanism ineffective during the return of the typewriter carriage to begin a new line of writing, so as to prevent the carriage from being stopped on such return stroke in an incorrect position by reason of a premature operation of the tabulating mechanism. This is of especial advantage when the carriage is returned by a motor, in which case the returning carriage might come into violent contact with a tabulating stop, causing undue racking and wear of the machine, and also burning out the carriage-returning motor.

To this end, the tabulating mechanism may be rendered ineffective by automatically locking it against actuation, by means controlled by the carriage-escapement devices.

A further object of the invention is to lock the tabulating mechanism against operation, while a type-key is depressed. This may be done by means under the control of the escapement devices, so as to be effective when the escapement devices, which are under the control of the numeral keys, are in their operated positions.

Another object of the invention is to render the type-keys ineffective while the carriage is being tabulated.

Another object of the invention is the provision of means to prevent the displacement of the escapement pinion when the carriage is released by the tabulating mechanism. This may be done by locking the loose dog, which is ordinarily effective when the carriage is released to displace the escapement wheel and the escapement pinion.

Other features and advantages will hereinafter appear.

In the accompanying drawings,—

Figure 1 is a sectional side elevation of the machine, showing the invention applied thereto.

Figure 2 is a perspective view, as seen from the rear of the machine, of the connections between the escapement devices and the carriage-releasing mechanism.

Figure 3 is a similar view, showing the tabulating mechanism locked against operation by the loose dog of the escapement devices during the return of the carriage.

Figure 4 is a view similar to Figure 3, and shows the loose dog of the escapement devices locked by the tabulating mechanism, so as to prevent a displacement of the escapement-wheel when the carriage is released by the tabulating mechanism.

The invention is herein shown as applied to an Underwood typewriting machine in which type-keys 10, when operated, depress key-levers 11 to rock bell-cranks 12 about their pivot 13, to swing the type-bars 14 upwardly and rearwardly about their pivot 15, to cause types 16 to strike against the front side of a platen 17. The platen is rotatably supported for line-spacing movements in a carriage 18, the latter traveling from right to left during letter-feeding movements on a front rail 20 and a rear rail 21 of the main frame 22. The carriage is urged from right to left by a spring-drum 23 connected to the right-hand end of said carriage by a strap 24. Letter-feeding movements of the carriage are effected by a universal bar 25 operated at each type-stroke by heels 26 on the type-bars 14, to move a bar 27, connected with the universal bar, rearwardly to operate a dog-rocker 28 to effect the reciprocation of a loose dog 30 and a fixed dog 31 between the teeth 32 of an escapement wheel 33 having the usual one-way driving pawl connection (not shown) with a pinion 34; the pinion meshing with a feed-rack 35 pivotally mounted on the typewriter carriage at 36. The loose dog is normally in engagement with the escapement wheel 33 (Figure 2), and is held against a fixed stop 37 on the dog-rocker 28 and against the tension of a spring 38; the spring 38 being diagonally disposed to have a forward pull on the upper end of the dog-rocker to hold it against an adjusting screw 40 which engages the lower end of the dog-rocker. When the universal bar 25 is operated, the dog-rocker 28 is swung about its

pivot 41 to move the loose dog out of engagement with the escapement wheel and the fixed dog into engagement with the disengaged tooth 32 of the escapement wheel. The loose dog is then swung about its pivot 42 by the spring 38 until it is arrested by a fixed stop 43 on an escapement bracket 44. When an operated type-bar returns, the universal bar 25 is returned by the usual spring (not shown), and the bar 27 permits the dog-rocker to be swung about its pivot to its normal position by the diagonally-disposed spring 38. Thus, the loose dog is brought into the path of the next tooth 32 of the escapement wheel, while the fixed dog is moved out of engagement with the tooth previously engaged by the loose dog, and consequently the carriage moves until the loose dog is arrested against the stop 37 (Figure 2), to effect a letter-space movement of the carriage.

The carriage may be tabulated from one column to a predetermined position in another by tabulating mechanism, which may be like that disclosed in the patent to J. C. McLaughlin, No. 956,144, of April 26, 1910. The tabulator comprises a plurality of denomination-selecting keys 45, each being provided with a key-lever 46 to be swung about a pivot 47 to raise a plunger 48 against the tension of a return spring 50; each plunger having at its upper end a denomination-stop 51 which is brought into the path of column-stops 52 adjustably mounted on a stop bar 53 supported by the typewriter carriage. When a tabulator-key is operated, the rack 35 is moved out of engagement with the pinion 34 by carriage-releasing mechanism comprising a universal release bar 54 operable by any one of the plungers 48, to rock a shaft 55 to which the universal bar is secured and pull downwardly on a link 56 connected to an arm 57 fixed on the shaft 55; the upper end of the link 56 being connected to a release lever 58, which is swung about a pivot 60 to raise the feed-rack 35 out of the mesh with the pinion 34 by means of a roller 61 mounted at the forward end of said lever. The carriage is then moved, by the spring-drum 23, until arrested in the selected position by the column-stop 52 and the operated denomination-stop or counter-stop 51.

The carriage may be returned to the beginning of a new line by carriage-returning means, which may be like that shown in the patent to F. A. Hart, No. 1,238,908, of September 4, 1917. The carriage-returning means may include a shaft 62 driven by a motor (not shown) through the intermediary of a belt 63 and a pulley 64 secured to the shaft 62. The motor may be started automatically by closing a switch, as shown in said patent, when the carriage reaches the end of a line, whereupon the shaft 62 begins to rotate and cause a cam 65 thereon, which co-operates with mechanism (not shown), to move rearwardly a pinion 66, slidably mounted on said shaft, to bring a clutch member 67 into engagement with a co-operative clutch member 68 on said shaft, and consequently rotate the pinion 66 to return the carriage through the intermediary of a rack 70 rigidly supported on said carriage. At the end of the return stroke of the carriage, the clutch member 67 is automatically moved out of engagement with co-operative clutch member 68, and the motor-switch is automatically opened, as shown in the above-mentioned Hart patent. To return the carriage from any letter-space position, there is provided a motor-starting key 71 which is effective to close the switch, to start the motor, and effect the return of the carriage, as above described.

It is desirable to render the tabulating mechanism ineffective, so as to avoid projecting the counter-stops 51 into the path of the column-stops 52 during the return movement of the carriage. To this end, the counter-stops 51 may be locked against operation by the carriage-release universal bar 54, which is engaged by the plungers 48 and is held against movement by a tail 72 on the loose dog 30, which swings into the path of an upwardly-extending arm 73, secured to the carriage-release rock-shaft 55. The loose dog 30 normally occupies the position shown in Figures 1 and 2 with the tail 72 out of the path of the arm 73. When the carriage starts to return, the pinion 34 is rotated, and through a one-way pawl connection (not shown), rotates the escapement wheel slightly, after which the pawl of the one-way pawl connection snaps over the teeth of the pinion 34. The spring 38 for the loose dog 30 then swings the latter about its pivot 42, and moves the tail or blocking arm 72 into the path of the arm 73 on the carriage-release rock-shaft (Figure 3), thus locking the carriage-release universal bar 54, and consequently the counter-stops 51. This is of especial advantage when the carriage is returned by the carriage-returning means, thus avoiding undue wear of the machine and the possibility of burning out the motor, which would result from successively arresting the carriage by premature operations of the tabulating mechanism.

In practice it sometimes happens that the typist depresses the tabulator-key 45 before the type-key 10 returns to its normal position, or, in other words, while the escapement, which is under the control of the type-key, is in its operated position. This results in incorrectly positioning the carriage by one letter-space. To illustrate, let it be assumed that the last digit in a column is being typed, and the typist, desiring to tabulate the carriage to the hundreds position of the

next column, depresses the tabulator-key corresponding to that position before the type-key returns; under these conditions, the carriage, instead of being arrested at the hundreds position, is arrested at tens position. Whether the carriage is correctly or incorrectly positioned depends on the relation of the loose dog 30 to the escapement wheel 33 at the time of the release of the carriage, which is accomplished by raising the feed-rack 35 out of mesh with the pinion 34, as hereinbefore described. When the carriage is released under normal conditions, that is when the dog-rocker occupies its normal position (Figures 1 and 2), the loose dog remains in engagement with the tooth 32 of the escapement wheel until the rack 35 re-engages the pinion 34. When the carriage is released under abnormal conditions, that is when the dog-rocker is held in its operated position by the operated type-key, the loose dog is at this time in a position to be engaged by the next succeeding tooth 32 of the escapement wheel, and consequently causes an added movement of one letter-space of the carriage after the counter-stop 51 moves out of engagement with the column-stop 52, or after the feed-rack 35 re-engages the escapement pinion 34, thus causing an incorrect positioning of the carriage.

To overcome the above-mentioned difficulty, the tabulator-keys 45 are locked against operation while the escapement mechanism is effective and until the type-key has returned sufficiently to permit the escapement mechanism to resume its normal position. For this purpose, the tail 72 of the loose dog 30 is moved into the path of the arm 73 of the carriage-release rock-shaft, thus locking the tabulator-keys, and consequently preventing the movement of the counter-stops 51 into the path of the column-stops. From the foregoing, it will be seen that the tabulating mechanism may be operated only when the escapement devices are in their normal positions.

It is also desirable to prevent the printing of the type-bars 14 during a tabulating operation of the carriage. For this purpose, the arm 73, on the carriage-release rock-shaft, moves into engagement with the rear face of the dog-rocker 28 to prevent its operation when a tabulator-key is depressed, and consequently prevents the types from striking the platen through the intermediary of the universal-bar 25.

Provision is made to prevent the displacement of the escapement pinion 34, which is usually caused by the spring 38 which swings the loose dog 30, thus rotating the escapement wheel, and consequently displacing the pinion when the feed-rack is lifted out of engagement with said pinion by the carriage-releasing mechanism. To prevent this, the arm 73 moves over the tail 72 of the loose dog when a tabulator-key is operated, thus preventing the loose dog from being actuated by the spring 38 when the carriage is released, and consequently leaving the pinion undisturbed.

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 of a carriage movable back and forth, tabulating mechanism including keys, connections operable by said keys, a universal bar operable by said connections to release said carriage, an arm extending from said universal bar, escapement mechanism including a loose dog having a tail thereon, means to operate said loose dog on the return of said carriage to bring the tail of said dog into the path of said arm, to lock said universal bar to prevent the operation of said connections while said carriage is returning.

2. In a typewriting machine, the combination of a carriage, escapement mechanism for said carriage, said escapement mechanism including a loose-dog, tabulating mechanism, and an arm operable by said tabulating mechanism to engage with said loose dog, so as to be locked thereby during the return of said carriage to prevent the operation of the tabulating mechanism.

3. In a typewriting machine, the combination of a carriage, tabulating mechanism for said carriage, type-keys, carriage-escapement mechanism, comprising a loose dog, operable by said type-keys, means operable by said tabulating mechanism to release the carriage from said escapement mechanism, and means under the control of the loose dog to lock the carriage-releasing means when the escapement mechanism is effective.

4. In a typewriting machine, the combination of a carriage, tabulating mechanism for said carriage, type-keys, carriage-escapement mechanism, comprising a loose dog, operable by said type-keys, means operable by said tabulating mechanism to release the carriage from said escapement mechanism, and a tail on said loose dog to lock the carriage-releasing mechanism when the loose dog is effective.

5. In a typewriting machine, the combination of a carriage, tabulating mechanism for said carriage, type-keys, carriage-escapement mechanism, comprising a loose dog, operable by said type-keys, means operable by said tabulating mechanism to release the carriage from said escapement mechanism, and a blocking arm on said loose dog, the carriage-releasing mechanism including an arm into the path of which the blocking arm moves, thus locking the tabulating mechanism when the loose dog is in its operated position.

6. In a typewriting machine, the combination of a carriage, escapement mechanism for said carriage, said escapement mechanism comprising a loose dog, and a feed-rack engaging with a pinion, tabulating mechanism, means operable by said tabulating mechanism to release the carriage from the escapement mechanism by taking the feed-rack out of mesh with the pinion, and means operable by the carriage-releasing means to engage the loose dog to prevent the displacement of said pinion when the carriage is released.

7. In a typewriting machine, the combination of a carriage, escapement mechanism for said carriage, said escapement mechanism comprising a feed-rack engaging with a pinion, and a loose dog, tabulating mechanism, means operable by said tabulating mechanism to release the carriage from the escapement mechanism by moving the feed-rack out of mesh with the pinion, and an element operable by said tabulating mechanism to engage the loose dog to prevent displacement of said pinion when the carriage is released.

8. In a typewriting machine, the combination of a carriage, escapement mechanism for said carriage, said escapement mechanism comprising a feed-rack engaging with a pinion, and a loose dog having a tail thereon; tabulating mechanism, means operable by said tabulating mechanism to release said carriage from the escapement mechanism by moving the feed-rack out of mesh with said pinion, and an arm connected with the carriage-releasing mechanism to be moved into engagement with the tail of said dog, to prevent the displacement of the pinion when the carriage is released.

9. In a typewriting machine, the combination of a carriage, type-keys, escapement mechanism operable by said type-keys, said escapement mechanism comprising a loose dog, a dog-rocker, an escapement wheel, and a pinion, a rack on said carriage meshing with said pinion, tabulating mechanism, means operable by said tabulating mechanism to release said carriage by moving the rack out of mesh with the pinion, and means operable by the releasing mechanism, said means being movable into co-operative relation with the loose dog to prevent displacement of the pinion when the carriage is released, said means being also effective to lock the dog-rocker, to render the type-keys ineffective, while the carriage is running.

10. In a typewriting machine, the combination of a carriage movable back and forth, tabulating mechanism, escapement mechanism including a loose dog, means to operate said loose dog on the return of said carriage, and means to engage with said loose dog to lock said tabulating mechanism against operation, while the carriage is being returned.

11. In a typewriting machine, the combination of a carriage movable back and forth, column-stops on said carriage, carriage-escapement mechanism comprising a loose-dog, tabulating mechanism comprising counter-stops, means to operate said loose dog on the return of said carriage, and means to engage with said loose dog to prevent movement of said counter-stops to effective position while the carriage is being returned.

12. In a typewriting machine, the combination of a carriage movable back and forth, tabulating mechanism, escapement mechanism including a dog-rocker and an interponent on said dog-rocker, and means to operate said interponent to lock said tabulating mechanism while said carriage is being returned.

13. In a typewriting machine, the combination of a carriage movable back and forth, tabulating mechanism for said carriage, escapement mechanism comprising a loose dog, and locking means controlled by the loose dog to prevent operation of the tabulating mechanism when the carriage is being returned.

HENRY RESCH.

Witnesses:
CATHERINE A. NEWELL,
EDITH B. LIBBEY.