

Nov. 5, 1940.

A. C. WAITE ET AL

2,220,184

VARIABLE SPACING MECHANISM FOR TYPEWRITERS

Filed June 8, 1939

2 Sheets-Sheet 1

Fig. 1.

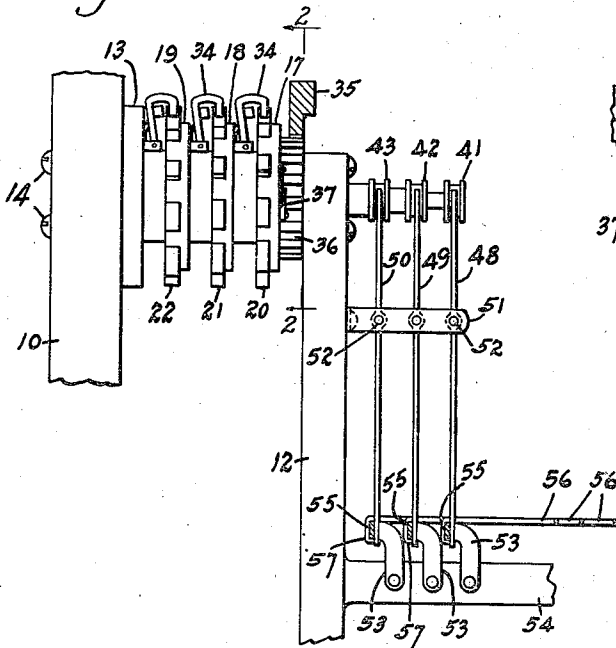


Fig. 2.

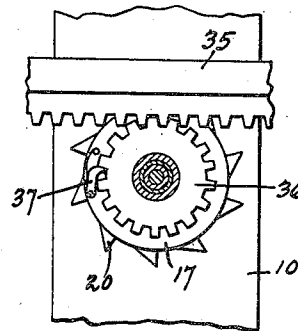


Fig. 3.

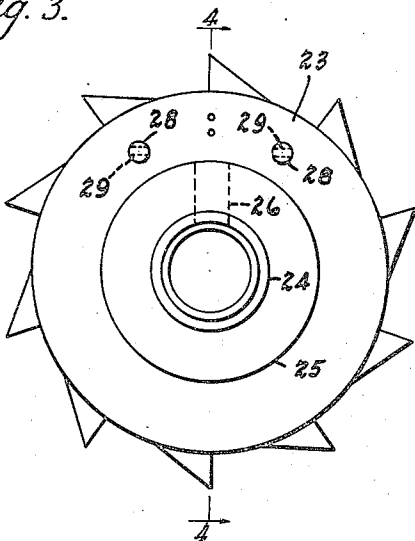
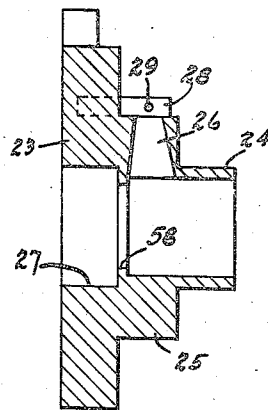


Fig. 4.



INVENTORS
A. C. Waite
and
C. F. Waite
BY *Carlos H. Stratton*
ATTORNEY.

Nov. 5, 1940.

A. C. WAITE ET AL

2,220,184

VARIABLE SPACING MECHANISM FOR TYPEWRITERS

Filed June 8, 1939

2 Sheets-Sheet 2

Fig. 5.

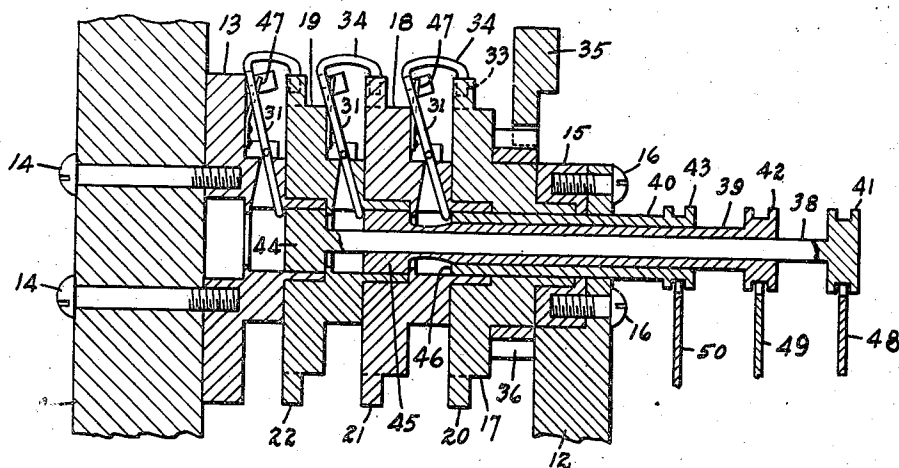


Fig. 6.

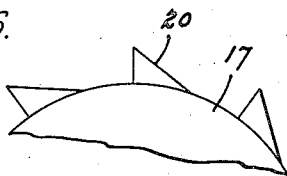


Fig. 7.

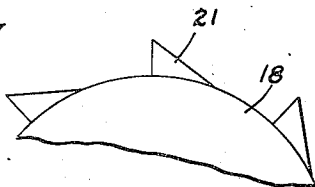


Fig. 8.

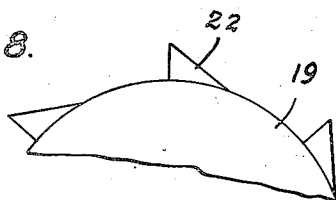
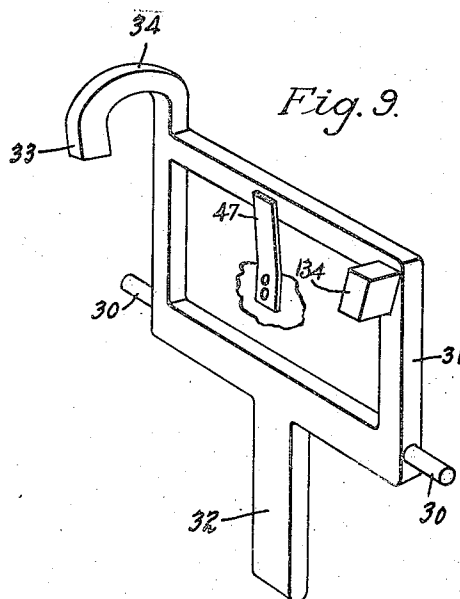


Fig. 9.



INVENTORS
A. C. Waite
and C. F. Waite
BY *Carlos H. Stratton*
ATTORNEY.

UNITED STATES PATENT OFFICE

2,220,184

VARIABLE SPACING MECHANISM FOR
TYPEWRITERSAlden C. Waite, Santa Monica, and Clark F. Waite,
Beverly Hills, Calif.

Application June 8, 1939, Serial No. 277,994

5 Claims. (Cl. 197—84)

Our invention relates to typewriter spacing means. The principal object of the invention is to provide means on a typewriter that will conform spacing of letters, figures and other characters on a typewriter, to the different widths of such letters, figures or other characters.

Heretofore the space for all letters, figures and characters on typewriters has been the same, irrespective of the width of same. E. g., the space allotted for a "w" is the same as the space allotted for an "l." The result is poor spacing of letters that are out of proportion with each other. It is an object of the invention to eliminate this objectionable feature in typewriters.

The invention also comprises novel details of construction and novel combinations and arrangements of parts, which will more fully appear in the course of the following description.

In the drawings, like reference characters designate similar parts in the several views.

Figure 1 is a broken elevation, partly in section, of an embodiment of our invention.

Figure 2 is a broken section taken on the line 2—2 of Figure 1.

Figure 3 is an enlarged face view of an escapement wheel comprised in the invention.

Figure 4 is a section taken on the line 4—4 of Figure 3.

Figure 5 is an enlarged, longitudinal section of the upper portion of Figure 1.

Figures 6, 7 and 8 are broken face views of successive escapement wheels comprised in the embodiment.

Figure 9 is a perspective view of pallets mounted on a pallet frame.

Referring more in detail to the drawings, the reference numbers 10 and 12 designate members of the frame-work of a typewriter. Bolted to member 10 is a relatively fixed escapement wheel 13. The bolts are indicated at 14.

A bearing 15 is fastened to the frame member 12 by bolts 16. Mounted between the bearing 15 and the stationary escapement wheel 13 is a series of rotary escapement wheels 17, 18 and 19.

Each of the rotary escapement wheels has a circumferential series of teeth. The teeth 20 on the wheel 17 are closer together than the teeth 21 on the wheel 18, and the teeth 21 on the wheel 18 are in turn closer than the teeth 22 on the wheel 19. No teeth are provided on the circumference of the stationary wheel 13.

Each of the wheels comprises a body member 23 from the side of which projects a bearing sleeve 24. A shoulder 25 surrounds the bearing sleeve 24. The shoulder 25 is radially apertured, as shown at 26. The side of the body 23 opposite from the bearing sleeve 24 is cylindrically recessed, as shown at 27. Studs 28 are laterally apertured, as shown at 29, to receive trunnions 30 of a pallet frame 31. An inward flange 32

is provided as a stop to limit movement of hereinafter described abutments, within the bearing sleeve 24.

The pallet frame 31 pivots on the escapement wheels by means of the trunnions 30. A lever arm 32 on said frame normally projects toward the axis of the escapement wheel lengthwise of the aperture 26. Pallets 33 and 134 are formed on the pallet frame 31. The pallet 33 is arched, as shown at 34, so that teeth of the adjacent escapement wheel may pass the pallet 33 at either side thereof. The pallets 33 and 134 are offset with regard to the circumferential row of teeth on the adjacent escapement wheel and the pallet frame is so arranged that one pallet or the other is arranged in the path of the next succeeding tooth on the adjacent escapement wheel.

A conventional rack 35 engages a pinion 36. The pinion 36 is loose upon the bearing sleeve 24 of the escapement wheel 17. A spring-urged detent 37 mounted on the escapement wheel 17 engages the pinion 36 and causes the escapement wheel 17 to rotate with the pinion when the latter is rotating in a counterclockwise direction, as it is shown in Figure 2. When the pinion 36 is rotating in a clockwise direction, as shown in said figure, the pinion rotates independently of the escapement wheel 17.

To operate the respective pallet frames, concentric plungers 38, 39 and 40 are telescopically arranged. The plungers 38, 39 and 40 respectively, have grooved heads 41, 42 and 43 at the outer ends thereof. The inner ends of the plungers 38, 39 and 40 respectively, have abutment ends 44, 45 and 46. The abutment ends 44, 45 and 46 are arranged to trip the pallet frames mounted on the escapement wheels 13, 19 and 18 respectively when the plungers are moved inwardly. The abutment ends of the plungers engage the lever arms 32 of the pallet frames.

Flat springs 47 tend to urge the pallet ends of the respective frames toward the escapement wheels upon which the frames are respectively mounted. Forked levers 48, 49 and 50 respectively fit in the grooved heads 41, 42 and 43 for selective operation of the escapement wheels. An arm 51 provides pivots 52 for the fork levers 48, 49 and 50. Pivoted fingers 53 on a frame member 54 have lugs 55 that engage ends of the levers 48, 49 and 50. Rods 56 having hooked ends 57 are hooked around the lugs 55. The rods 56 are connected to the horizontally moving rods (not shown) that actuate the type bars of the typewriter. Such rods are conventional construction and familiar to those skilled in the art, so further description and illustration of same are deemed unnecessary.

In the operation of the invention, the escapement wheel 17 may be connected to space for

narrow letters such as the letter "l." The escapement wheel 19 may be used to space for wide letters such as "m" or "w." The escapement wheel 18 may be used to space for medium size letters such as "n," "a," etc. It is to be understood also that combinations of these three escapement wheels may be employed to provide other varieties of spaces, for more than one of the escapements can be used at a time.

By way of illustration of the operation, if the plunger 38 is moved inward with regard to the escapement wheels, its abutment head 44 trips the pallet frame 31 on the wheel 13. This permits such pallet frame to release the engaged tooth on the escapement wheel 19 and the other pallet on the same frame engages the next succeeding tooth on the escapement wheel 19. The conventional spring (not shown) that actuates the carriage tends to rotate the escapement wheels, through the intermediary of the rack 35 and the pinion 36. The escapement wheel 19 is thus brought to rest, which thereby brings to rest the succeeding escapement wheels 18 and 17. Each escapement wheel depends upon the next preceding escapement wheel for its stop position.

If the plunger 39 is moved inward with regard to the escapement wheels, the pallet frame 31 on the wheel 19 is rocked, thus releasing the escapement wheel 18 until the next tooth thereof is engaged by the other pallet on the pallet frame on the wheel 19. The wheel 18 then comes to rest. The wheel 19 not having been released, remains stationary. The wheel 17 comes to rest with the wheel 18. In this manner, each escapement wheel is dependent upon the next preceding escapement wheel and all of the succeeding escapement wheels move together as a unit until the actuated escapement wheel is stopped.

Conventional mechanism of a typewriter including carriage, (except the rack 35) keys, typebasket, etc., are not shown or described since they are well known to those skilled in the art.

While we have illustrated and described what we now regard as the preferred embodiment of our invention, the construction is, of course, subject to modifications without departing from the spirit and scope of our invention. We, therefore, do not wish to restrict ourselves to the particular form of construction illustrated and described, but desire to avail ourselves of all modifications which may fall within the scope of the appended claims.

Having thus described our invention, what we claim and desire to secure by Letters Patent is:

1. A spacing mechanism for a typewriter having a carriage controlling escapement pinion, said mechanism including escapement wheels having differently spaced teeth and otherwise of similar form, the first of said wheels being operatively connected to the escapement pinion, a pallet member carried by the second wheel and effective to control the first wheel and also connect the second wheel with the first wheel, a second pallet carried by a stationary part of the mechanism and in engagement with and controlling the second wheel, said pallets being of similar construction and having extensions in line with one another in the mechanism, and key-operated means movable along said line for independently engaging said extensions to actuate the pallets.

2. A spacing mechanism for a typewriter having a carriage controlling escapement pinion, said mechanism including a series of escapement wheels spaced apart in line, having differently spaced teeth and otherwise of similar form, the first of said wheels being operatively connected with the escapement pinion, a pallet member carried by a stationary part of the mechanism and engaging the teeth of the last wheel of the series, pallet members carried by said last wheel and each intermediate wheel of the series, each of said last mentioned pallets engaging the teeth of the next foremost wheel of the series including the first wheel, all of said pallets being of similar construction and having actuating extensions in a line lengthwise of the series of wheels, and key operated control means movable along said line for independently actuating said pallet extensions.

3. In a spacing mechanism for typewriters, a series of axially aligned and spaced apart escapement wheels having teeth spaced apart different distances, said wheels being otherwise of similar construction and having central openings in a line and forming a bore axially of the series, pallet members of similar construction in the spaces between the wheels for controlling and connecting the same in the series, and having actuating extensions projecting into the said bore, and key-operated selecting means in said bore having portions independently engaging and actuating the said extensions of the pallet members.

4. In a typewriter having a carriage, a rack on the carriage, and a pinion meshing with the rack and limiting longitudinal movement of the rack and carriage: spacing mechanism for the typewriter comprising a plurality of key-selected escapement wheels in axially aligned and spaced apart relation, having axial openings forming with one another an axial bore, the wheels being connected with the pinion and having teeth of relatively different spacing for limiting the amount of rotation of the pinion to different amounts, pallet members separately controlling said wheels and having actuating portions extending into said bore, and key-operated telescoping plungers shiftable in said bore for selectively actuating the pallet members to release the wheels the different amounts respectively.

5. In a typewriter having a carriage, a rack on the carriage, and a pinion meshing with the rack and limiting longitudinal movement of the rack and carriage: spacing mechanism for the typewriter comprising a plurality of axially aligned and spaced apart toothed escapement wheels, the teeth being different distances apart on the different wheels, at least one of the wheels providing bearing means for an adjacent wheel, said bearing means having centrally aligned openings forming a bore, pallet frames on a relatively stationary part of the mechanism and on at least one of the wheels movable in the spaces between the wheels and having portions projecting into said bore, pallets on the frames arranged to engage teeth on an adjacent wheel, reciprocating means in the bore to selectively engage and move one or another of the pallet frames, and key-operated mechanism to actuate said reciprocating means.

ALDEN C. WAITE.
CLARK F. WAITE.