S YANAGIWARA.

TYPE WRITING MACHINE.

APPLICATION FILED FEB. 1, 1915.

1,206,072.

Patented Nov. 28, 1916.

2 SHEETS—SHEET 1.

FIG. 1.

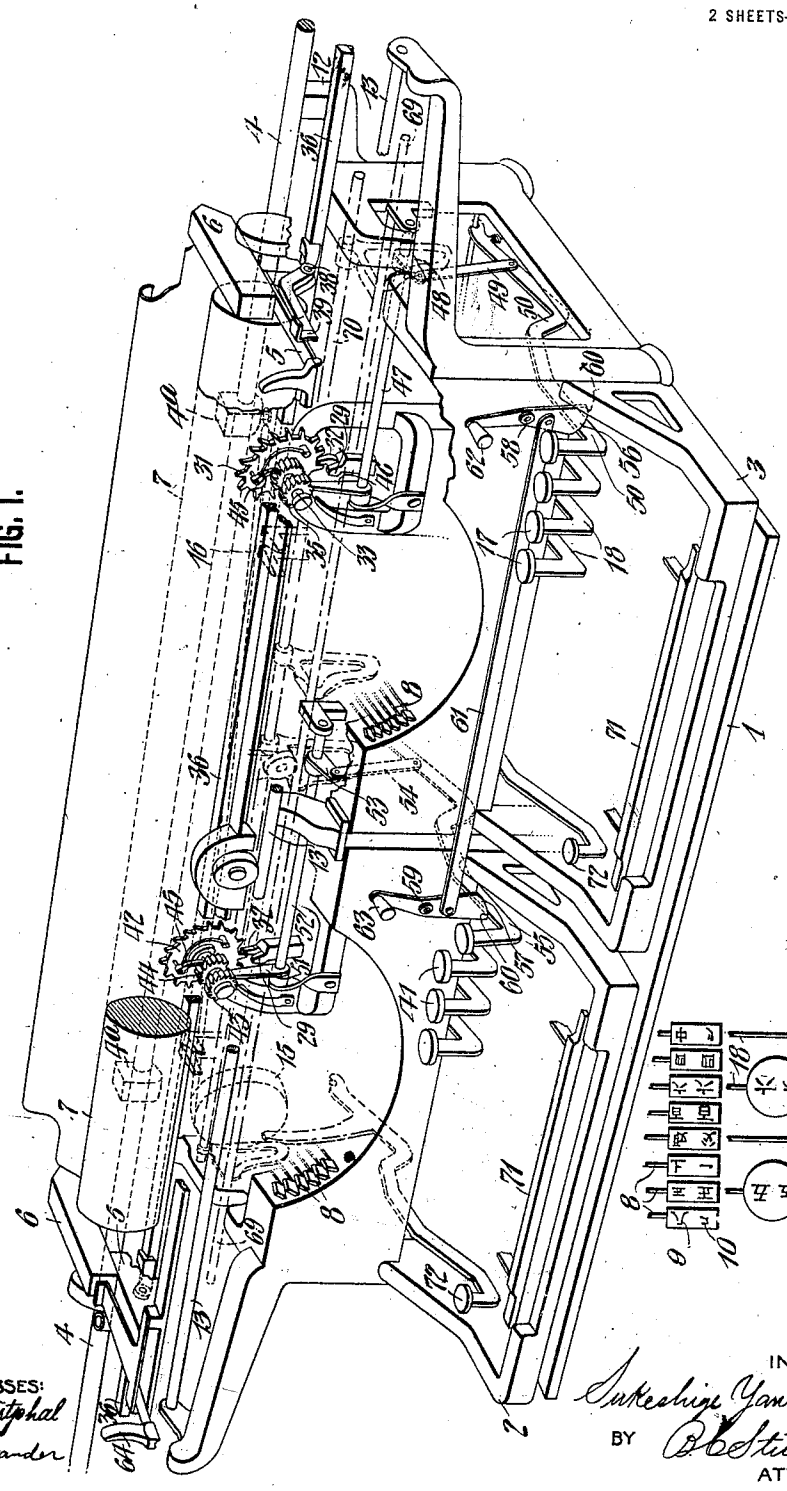


FIG. 2.

WITNESSES:

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2 SHEETS—SHEET 2.

FIG. 4.

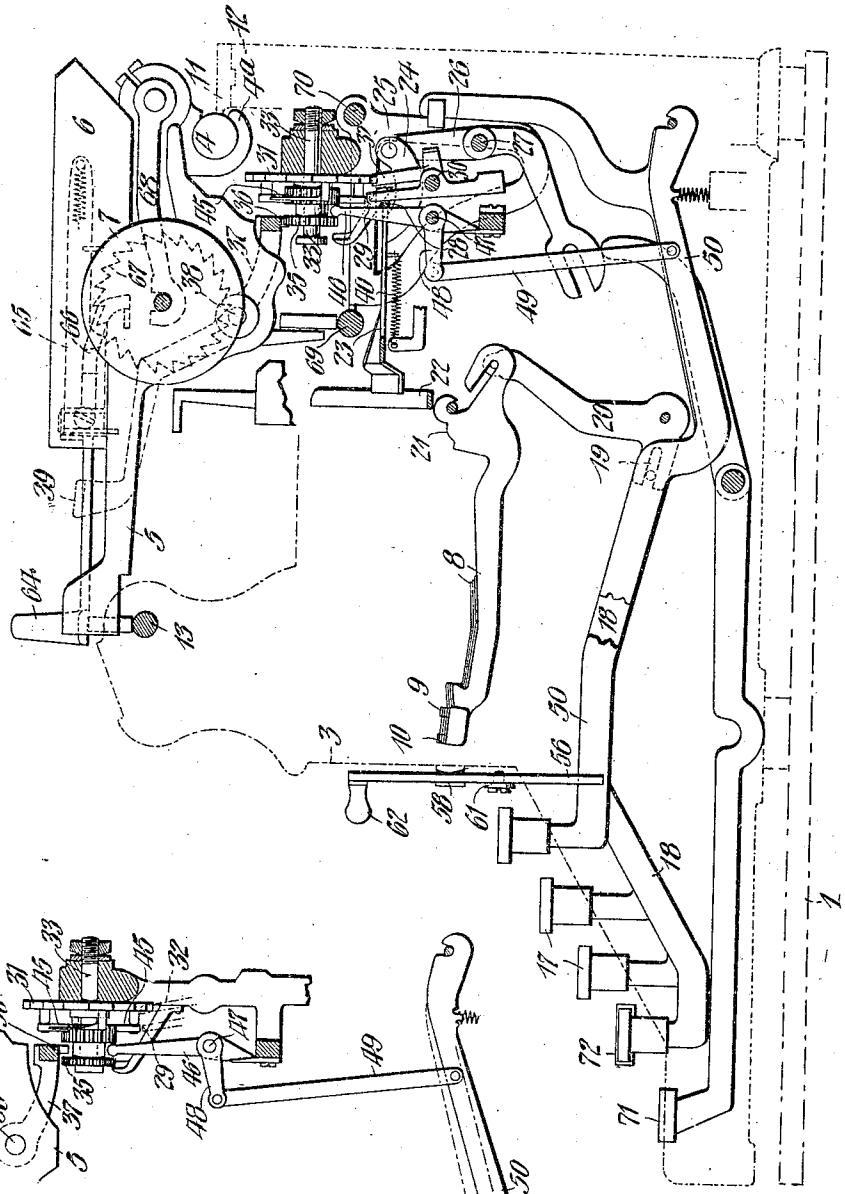


FIG. 3.

WITNESSES:

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UNITED STATES PATENT OFFICE.

SUKESHIGE YANAGIWARA, OF BROOKLYN, NEW YORK, ASSIGNOR TO UNDERWOOD TYPEWRITER COMPANY, OF NEW YORK, N. Y., A CORPORATION OF DELAWARE.

TYPE-WRITING MACHINE.

1,206,072. Specification of Letters Patent. Patented Nov. 28, 1916.

Application filed February 1, 1915. Serial No. 5,344.

To all whom it may concern:

Be it known that I, SUKESHIGE YANAGIWARA, a subject of the Emperor of Japan, residing in Brooklyn borough, in the county of Kings, city and State of New York, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

This invention relates to a typewriting machine having a much larger capacity than machines now in common use.

My invention is intended for use in writing characters in Japanese or other languages in which it is desirable to provide for writing far more than the number of characters usual in typewriting machines. In order to do this, I join two typewriting machines side by side, to make a double machine, each unit having its own type-system and its own keyboard; and upon such double machine I mount a carriage, which can be moved over both units and is capable of being controlled by either keyboard throughout the entire range of movement of the carriage. Each keyboard operates its own carriage escapement, and the carriage has a single long rack for coöperation with either escapement mechanism. I provide means for throwing into use either escapement mechanism, and simultaneously silencing the other escapement mechanism. The carriage rack may be lifted by the usual general release key to shift the carriage from side to side of the machine as required. I provide, preferably at the keyboard, a handle, which may be operated to throw either escapement mechanism into use and the other out of use, so that, when writing on one of the keyboards, the operative needs only to see that said handle is in one position, and when writing on the other keyboard, he has only to see that said handle is in the other position.

The most frequently used characters may be grouped all on one main keyboard, and the infrequently used characters may be grouped on the other or special keyboard, whereby the operative may, at any time, shift the carriage over to write a single infrequent character, and then shift the carriage back again, without the necessity of silencing the carriage escapement mechanism of the main keyboard.

The invention may also be used for writing two languages, or for writing two kinds of types in the same language.

Provision is made for shifting the platen to different case positions at any point in the entire range of travel of the carriage.

Other objects and advantages will hereinafter appear.

In the accompanying drawings, Figure 1 is a front perspective view of a double-keyboard typewriting machine. Fig. 2 shows diagrammatically a series of types having their characters in cumbent positions and a series of keys therefor. Fig. 3 is a sectional side elevation to show the carriage letter-feeding rack released from one of the escapement pinions. Fig. 4 is a sectional side elevation of the machine taken about centrally of one of the two units of which the double machine is made up, and showing the parts in normal positions, the carriage rack being here shown connected to the escapement pinion shown in this portion of the entire machine.

Upon a base 1 may be secured rigidly, side by side, the frames 2, 3, of two Underwood typewriting machines, each having its own individual keyboard; said machines having a common rear track or rail 4 for a carriage 5 having collars 4^a to fit on said rail, and carrying an up-and-down shiftable platen frame 6, on which is mounted a revoluble platen 7, said carriage being preferably of about double the ordinary length, so as to take in extremely wide sheets; and the length of the carriage may be about equal to the width of the double machine. This carriage may be moved from one unit of the double machine over to the other unit, and the entire writing field of the platen may be written upon by either of the systems of type-bars 8; each bar preferably carrying a lower-case character 9 and an upper-case character 10. The single rear rail or track 4 may extend beyond the ends of the double machine, as illustrated in Fig. 1, and may be supported by suitable tongues or carriers 11 fixed to the tops of arms or uprights 12. The single front rail 13 may be secured to the end portions of the frames 2, 3, which may overhang. The carriage has a front roll to run upon the front rail 13. A spring-barrel 15 may be connected

by a strap 16 to the carriage 5 to propel the same.

At Fig. 4 is shown a central view of the right-hand unit of the double typewriting machine. The letter or character keys 17 are mounted upon levers 18, which have pin-and-slot connections at 19 with bell-cranks 20, to pull the type-bars 8 upwardly to strike against the front face of the platen 7 as usual in the Underwood typewriting machine. Each type-bar has a heel 21 to press rearwardly a single universal bar 22, which is fixed upon the forward end of a frame 23; the latter having rearwardly-extending arms 24 whereby it is pivoted at 25 upon a pair of upstanding idle arms 26, the latter pivoted at 27 upon the framework of the typewriter. The universal bar has a lug 28 which engages and presses rearwardly a dog 29 (pivoted at 30) to throw said dog 29 into engagement with an escapement wheel 31 and hold the same steady, while a normally-engaged limber dog 32 escapes from the tooth of the wheel 31, and flies past said tooth to a position opposite the next notch, preparatory to the return of the dogs and consequent escapement movement of the carriage 5. Said escapement wheel is carried upon a rotary shaft 33, on which is loosely and slidably mounted a pinion 35, to mesh with a rack 36, which is carried upon the ends of swinging arms 37, pivoted at 38 upon the ends of the carriage 5. One of said arms 37 has a carriage-release key 39, whereby the rack may be lifted out of engagement with the pinion, and the carriage released entirely from the control of any escapement device.

The step-by-step feeding operation of the carriage, by means of the described escapement devices, is the same as commonly practised in the Underwood typewriting machine. Upon the return of the type-key to normal position, the universal bar 22 is returned by a spring 40, the dog 29 releases the wheel 31 to permit the carriage to be drawn forward by the spring 15, and the limber dog 32 enters the next notch of the wheel 31 and arrests the latter accordingly, so that the carriage is permitted to feed only one step.

The operation of the mechanism in the left-hand unit is substantially the same as that already described in connection with the right-hand unit; the keys 41 corresponding with the keys 17, the escapement wheel 42 corresponding with the wheel 31, and having a pinion 43 corresponding with the pinion 35, to mesh with the rack 36; said rack being long enough to remain in mesh with either pinion 35 or 43 during the writing of either system of types upon the whole length of the platen. In other words, either keyboard of the machine may control the step-by-step feeding of the carriage throughout its entire range of travel, and hence may be used for writing a maximum length of line extending from one end of the platen to the other. The description of the parts 8 to 38 inclusive applies to the left-hand machine or unit the same as to the right-hand unit; and the main portion of Fig. 4 may be regarded as a drawing of either of said units. When either keyboard is in use, the other is preferably wholly or mainly out of use, and accordingly the escapement wheel of the unused keyboard is silenced, so as not to interfere with the feeding movements of the carriage 5 under the control of the escapement mechanism which is operated by the active keyboard. Each of the pinions 35 and 43 is slidable forwardly upon the escapement-wheel shaft 33 to release the pinion from the rack 36, as indicated in Fig. 3. Either pinion may be out of mesh while the other is in mesh, so that the latter will solely control the typewriter carriage 5. The driving power of the rack upon the pinion is transmitted in each case through a ratchet wheel 44 and pawls 45 (as usual) to the escapement wheel 31 or 42; said pawls being mounted upon the escapement wheel, and said ratchet wheel 44 being of sufficient width to permit it to slide with the pinion 43 from the Fig. 4 position to the position at Fig. 3, without separating itself from the pawls 45. The release of pinion 35 from the rack may be effected by an upstanding arm 46, mounted upon a horizontal transverse rock shaft 47, the latter carrying at its outer end a crank 48 connected by a link 49 to a lever 50, similar in structure to the type-key levers 17. Depression of the lever 50 will pull down the link 49, rock the crank 48, shaft 47, and arm 46, and thereby shift the pinion 35 forwardly to the Fig. 3 position, so that the carriage may be under the exclusive control of the other pinion 43; that is, under the control of the left-hand keyboard. The pinion 43 may be similarly shifted by means of corresponding parts, including arm 51, rock shaft 52, crank 53, link 54, and lever 55. In order to hold down either lever 50 or lever 55, so as to leave both hands of the operator free to manipulate the type-keys, there are provided cams 56, 57, pivoted, respectively, at 58, 59, upon the framework of the machine; said cams adapted to bear upon the upper ends of the key levers 50, 55, to depress the same and lock them down, as indicated in the case of cam 57 at Fig. 1; each cam preferably having a dead portion 60 concentric with the pivot 59, so that the lever is automatically locked down. These cams may be connected by a cross-link 61, so that when either cam is effective, the other is ineffective; and hence the operation of shifting the machine to condition for writing on either keyboard is simplified, and liability is avoided of the two pinons 35 and 43 being in mesh at the same time with the

single rack 36. Each cam may be provided with a handle, as 62, 63, which may be arranged so that when either handle is pressed to the right, the right-hand keyboard will be out of use, and when pressed to the left, the left-hand keyboard will be out of use, as at Fig. 1, in which the left-hand pinion 43 is shown shifted forward out of engagement with the escapement rack 36, while the right-hand pinion 35 is in its rearward or rack-engaging position.

The invention is suitable for writing in any language. In writing English and other European languages, the sheet is inserted head first, and the lines written across the page, and the platen is rotated to produce spaces between the horizontal lines. In writing Japanese and certain other languages, the sheet is inserted right-hand side first, with the head of the sheet at the left, and the platen is rotated to bring the sheet to position for writing the first line, which will extend from top to bottom of the page, the characters being written one under another, and the types having the characters in cumbent positions for this purpose, as at Fig. 2. When writing Japanese, the escapement mechanism 36, 35, etc., (or 43, etc.), feeds the sheet from top to bottom of the page, and the line-spacing lever 64 feeds the sheet from side to side, to produce vertical spaces between the successive lines; said lever 64 corresponding to the usual Underwood line-spacing lever, and driving a slide 65, which operates a pawl 66 and ratchet wheel 67 fixed to the platen 7.

The characters most frequently used may be assembled all on one of the keyboards, so that the bulk of the writing will be done on such keyboard; while at any time, in order to write an unusual character, the carriage may be shifted across to enable the writing of the character in the other type-system; the use of the general carriage-release key 39 permitting the carriage to be shifted readily from one side to the other. If two or more special characters are to be written, one of the handles 62, 63, may be shifted accordingly, so as to bring into use the carriage escapement mechanism of the special keyboard; and the handle may be returned whenever it is desired to resume writing upon the ordinary keyboard. The platen frame 6 may be mounted by the usual arms 68 to shift up and down, and the usual shift-frames of the two typewriting units may be joined into a single frame, comprising a front shift rail 69 and a rear rock shaft 70, said rail and shaft extending across both units. Each unit may have the usual space-key 71 at the front of the keyboard, and the usual shift-key 72. It is not necessary, however, that only a single language be employed, as one keyboard may be devoted mainly or wholly to characters of one language, while the other keyboard may be devoted mainly or wholly to the characters of another language; and the machine may be applied to still other purposes.

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. The combination of two type systems, each having a keyboard, a carriage mounted to coöperate with either type system, a rack on said carriage, two escapement mechanisms for coöperation with said rack, one of said escapement mechanisms for each of said type systems, and shiftable means for silencing either escapement mechanism.

2. The combination of two type systems, each having a keyboard, a carriage mounted to coöperate with either type system, a rack on said carriage, two escapement mechanisms for coöperation with said rack, one of said escapement mechanisms for each of said type systems, and shiftable means for silencing either escapement mechanism and concomitantly bringing the other into use.

3. The combination with a carriage and two escapement mechanisms therefor, of separate type systems respectively controlling said escapement mechanisms, and shiftable means for silencing either of said escapement mechanisms and concomitantly bringing the other into use.

4. The combination of two type systems, each having a keyboard, a carriage mounted to coöperate with either type system, a rack on said carriage, two escapement mechanisms for coöperation with said rack, one of said escapement mechanisms for each of said type systems, and means for dissociating each of said escapement mechanisms from said rack.

5. The combination of two type systems, each having a keyboard, a carriage mounted to coöperate with either type system, a rack on said carriage, two escapement mechanisms for coöperation with said rack, one of said escapement mechanisms for each of said type systems, and means for dissociating each of said escapement mechanisms from said rack; each escapement including a pinion to mesh with said rack, and said dissociating means including a device for disengaging its pinion from said rack.

6. The combination of two type systems, each having a keyboard, a carriage mounted to coöperate with either type system, a rack on said carriage, two escapement mechanisms for coöperation with said rack, one of said escapement mechanisms for each of said type systems, and means for dissociating each of said escapement mechanisms from said rack; each escapement including a pinion to mesh with said rack, and said dissociating means including a device for disen-

gaging its pinion from said rack, and also including a device connecting said pinions, so that when either is moved out of engagement, the other is moved into engagement with said rack.

7. The combination of two type systems, each having a keyboard, a carriage mounted to coöperate with either type system, a rack on said carriage, two escapement mechanisms for coöperation with said rack, one of said escapement mechanisms for each of said type systems, and means for dissociating each of said escapement mechanisms from said rack; each escapement including a pinion to mesh with said rack, said rack being mounted for movement away from both of said pinions to release the carriage from the control of whichever escapement mechanism is in use.

8. The combination of two type systems, each having a keyboard, a carriage mounted to coöperate with either type system, a rack on said carriage, two escapement mechanisms for coöperation with said rack, one of said escapement mechanisms for each of said type systems, and means for dissociating each of said mechanisms from said rack; each escapement including a pinion to mesh with said rack, and also including a lever extending to the keyboard, a pinion-shifter, and a connection from said lever to said pinion-shifter.

9. The combination with a carriage and two escapement mechanisms therefor, of shiftable means for silencing either of said escapement mechanisms; each escapement silencing means including a lever, cams for operating said levers alternately, connections between said cams, and a finger-piece.

10. The combination with two sets of keys and a carriage, of shiftable means for enabling either set of keys to control the carriage to the exclusion of the other set.

11. The combination of two type systems arranged side by side and each having a keyboard, a step-by-step feeding carriage mounted to move endwise over both systems to coöperate with said systems, and means for enabling either keyboard to control the feeding movements of said carriage throughout the entire range of travel thereof.

12. The combination of two type systems arranged side by side and each having a keyboard, a step-by-step feeding carriage mounted to move endwise over both systems to coöperate with said systems, and means for enabling either keyboard to control the feeding movements of said carriage throughout the entire range of travel thereof; said carriage having a platen of such length that when one end of the platen is opposite the printing point in one type system, the middle portion of the platen is at the printing point of the other type system.

13. The combination of two type systems arranged side by side and each having a keyboard, a step-by-step feeding carriage, and means for enabling either keyboard to control the feeding movements of said carriage to the exclusion of the other keyboard.

14. The combination of two type systems each having a keyboard, a step-by-step feeding carriage, means to enable one of said keyboards to control the feeding movements of said carriage throughout the entire range of travel thereof, and means for enabling the other keyboard to control the feeding movements of said carriage at will.

15. The combination of two type systems arranged side by side and each having a keyboard, a step-by-step feeding carriage mounted to move endwise over both systems to coöperate with said systems, and means for enabling either keyboard to control the feeding movements of said carriage to the exclusion of the other keyboard throughout the entire range of travel of said carriage.

16. The combination of two type systems arranged side by side and each having a keyboard, a step-by-step feeding carriage mounted to move endwise over both systems to coöperate with said systems, means for enabling either keyboard to control the feeding movements of said carriage throughout the entire range of travel thereof; said carriage having a platen of such length that when one end of the platen is opposite the printing point in one type system, the middle portion of the platen is at the printing point of the other type system, and platen-shifting means effective at all points in the travel of said carriage.

17. A double typewriting machine having a series of Japanese types divided into two systems to write on a single carriage movable from one system to the other, the keys being also divided into two systems, and each system of keys controlling the carriage throughout the entire range of travel thereof.

18. The combination with a carriage, of means to drive the carriage, mechanisms to individually control the movements of the carriage, two carriage-releasing keys arranged to control said mechanisms and connected so that in one position the carriage is released from one controlling mechanism, and in the other position the carriage is released from the other controlling mechanism.

19. A double typewriting machine comprising two typewriter units placed side by side and rigidly joined together, each unit comprising a system of rearwardly striking type-bars and a keyboard therefor and also an escapement mechanism, a carriage having a rack to coöperate with said escapement mechanisms, said carriage with its platen of a width to extend completely across both

units, and each escapement mechanism capable of controlling the carriage for the entire range of movement thereof, each escapement mechanism comprising a pinion to mesh with said rack and a key-controlled escapement wheel connected to said pinion, levers to disengage said pinions from said rack, cams to actuate said levers, means connecting said cams to cause either pinion to engage the rack while the other disengages the rack, front and rear rails extending over both said units for said carriage, a platen frame being mounted on said carriage for shifting said platen to different case positions, and a platen-shift rail extending across both units and forming part of a shift frame for shifting said platen at all points in the travel of said carriage.

20. The combination of two type systems, each having a keyboard, a carriage mounted to coöperate with either type system, a rack on said carriage, two escapement mechanisms for coöperation with said rack, one of said escapement mechanisms for each of said type systems, shiftable means for silencing either escapement mechanism, and a general carriage-release key.

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Witnesses:
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