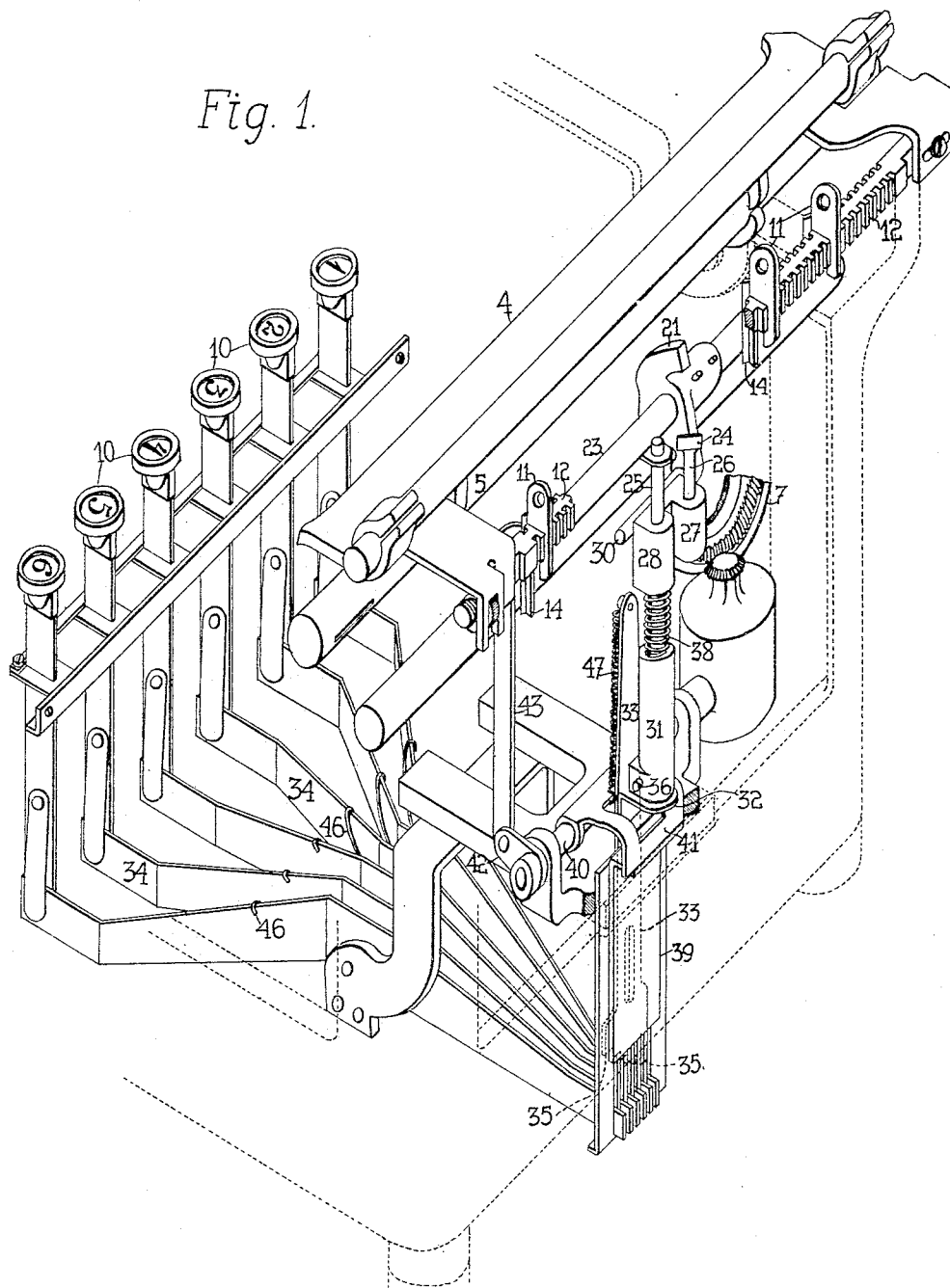


961,280.

4 SHEETS—SHEET 1.

Fig. 1.



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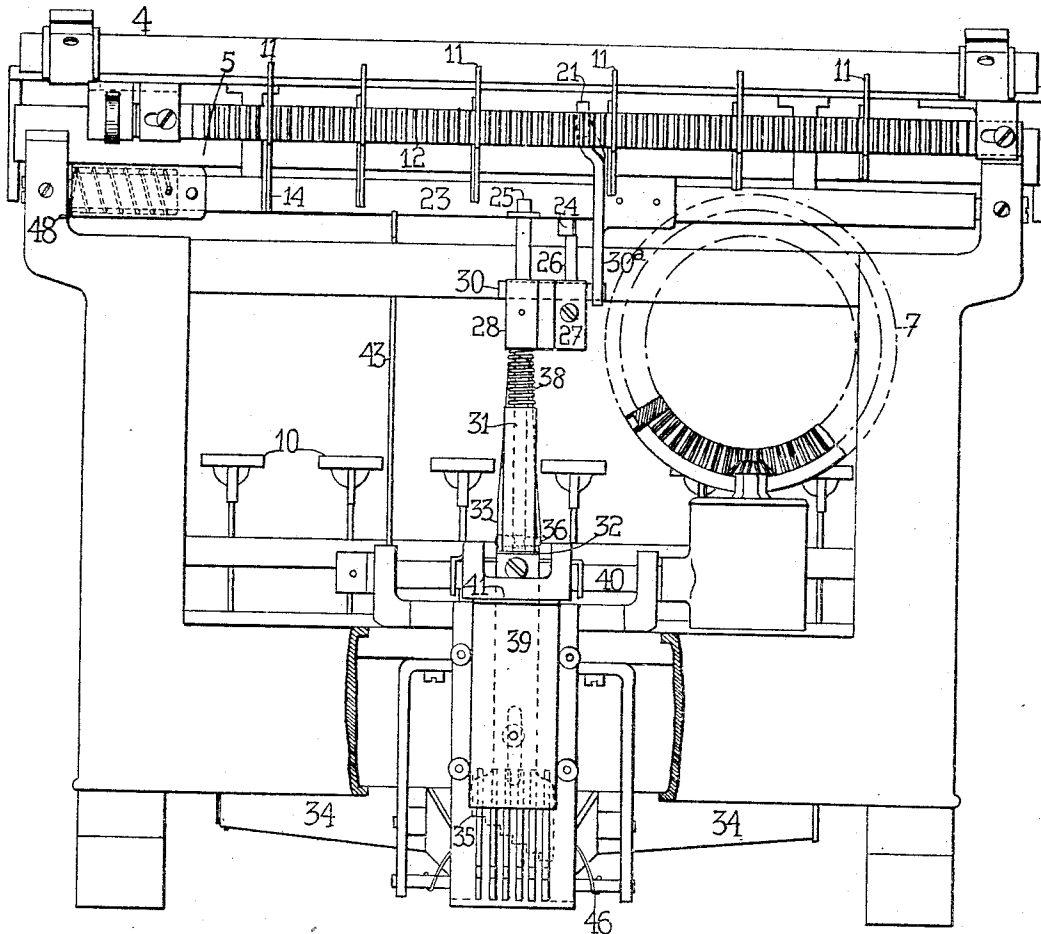
F. A. YOUNG.
TYPE WRITING MACHINE.
APPLICATION FILED AUG. 25, 1909.

961,280.

Patented June 14, 1910.

4 SHEETS—SHEET 2.

Fig. 2.



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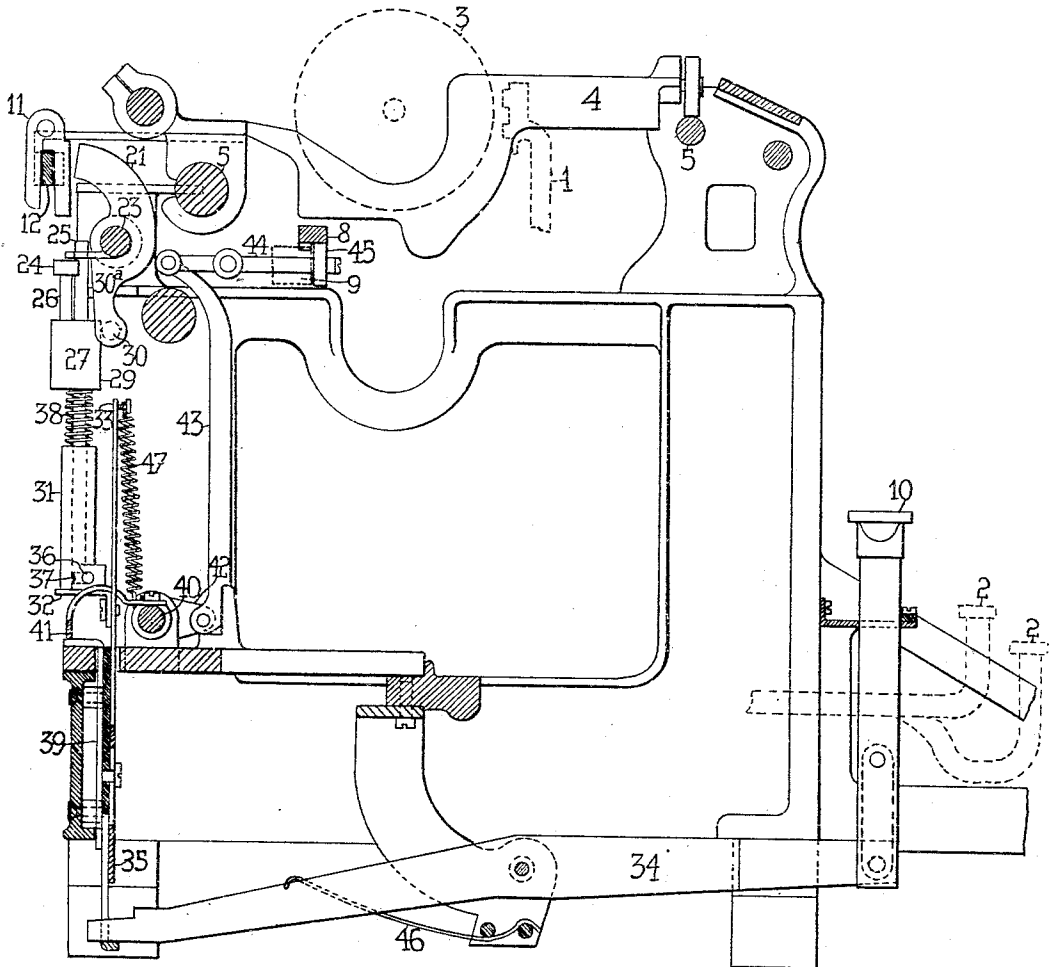
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Patented June 14, 1910.

4 SHEETS—SHEET 3.

Fig. 3.



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961,280.

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4 SHEETS—SHEET 4.

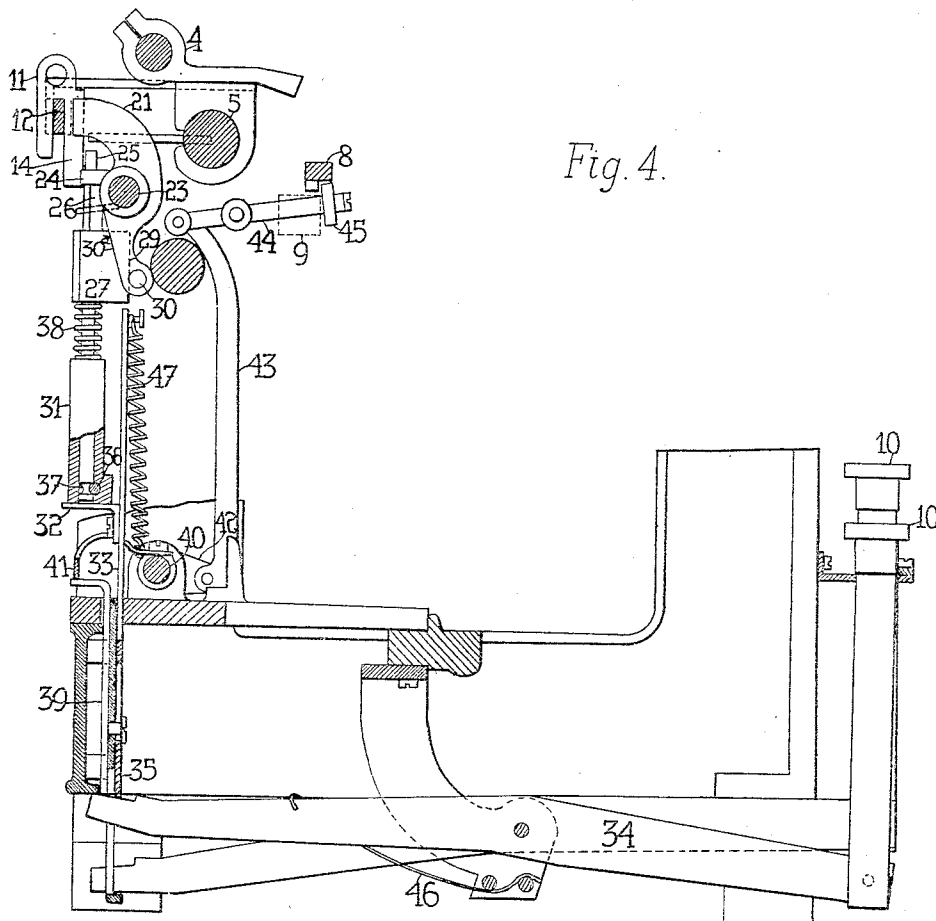


Fig. 4.

Fig. 5.

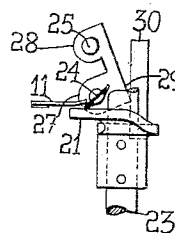
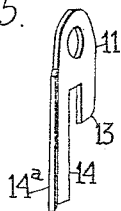


Fig. 6.

Fig. 7.

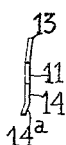
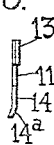


Fig. 8.



Witnesses

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UNITED STATES PATENT OFFICE.

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TYPE-WRITING MACHINE.

961,280.

Specification of Letters Patent. **Patented June 14, 1910.**

Application filed August 25, 1909. Serial No. 514,644.

To all whom it may concern:

Be it known that I, FRANK A. YOUNG, a citizen of the United States, residing in New York, in the county of New York 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 tabulating mechanism for typewriting and other machines, and particularly to means for enabling the carriage to jump to any selected column, and is in the nature of an improvement upon the devices disclosed in U. S. Patent No. 925,411 of June 15, 1909.

In said patent was shown a series of column stops each provided with a tappet, the tappets arranged in echelon, and a single stop mounted upon the framework of the machine, and also a key-operated interponent to be engaged by any selected tappet and caused to move the single framework stop into the path of the corresponding column stop; so that the movement of the carriage was made available to cause the main frame stop to project into the path of any selected column stop on the carriage. Different keys move the interponent to different positions to be engaged by the selected tappet, so that the carriage could be arrested in any desired column.

The object of the present improvement is to simplify and improve the column skipping mechanism, particularly with a view to reducing the number of parts and simplifying the operation, and also to render the operation of the machine reliable.

Another object is to simplify and improve the construction of the column stops.

According to the present invention, the column stops are preferably vertically arranged, being set downwardly between the teeth of a rack, said rack consisting of a bar having teeth on its front and rear sides. The front member of each fork is prolonged downwardly to form a tappet; and the tappets are of different lengths to facilitate selecting the columns. The framework stop is preferably pivoted upon the machine frame in front of the column stop rack, and may swing rearwardly into engagement with any stop. The interponent is much simplified, consisting of a single piece or part, which directly engages said framework stop, without the necessity of employing a sep-

arate connecting lever or link. The interponent is pivoted upon a carrier, which is operated by the keys and caused to slide vertically; an upward movement serving to bring the interponent into the path of any selected tappet, and the tappet serving to turn the interponent horizontally forward about its pivot, to engage an arm on the framework stop, and thereby swing the latter into the path of the active column stop.

Another object of the invention is to provide improved means for retaining the column stop where adjusted on the rack bar. This end is accomplished by throwing one of the column stop forks a trifle out of alignment with the other, so that the metal must be sprung a trifle when the stop is inserted in the rack.

In the accompanying drawings, Figure 1 is a perspective view of the present improvements applied to an Underwood front strike writing machine. Fig. 2 is a rear elevation of the tabulating mechanism. Fig. 3 is a sectional side elevation showing the parts in normal positions. Fig. 4 is a view similar to Fig. 3, but showing the tabulator key depressed. Fig. 5 is a perspective view of a column stop. Fig. 6 is a plan of the stop devices in working positions, corresponding to Fig. 4. Fig. 7 is an enlarged end view of a stop showing the disalignment of the forks thereof. Fig. 8 is a similar view illustrating another method of disaligning the forks.

In said machine types 1 are caused by keys 2 to strike against the front side of a platen 3, which is mounted upon a carriage 4, sliding on one or more rails 5 and connected by a strap to a spring-barrel 7. Upon the carriage is provided a releasable rack 8, which meshes with a pinion 9 forming part of an escapement mechanism.

Keys 10 are arranged in a row at the back of the keyboard of the machine and are numbered from 1 to 10, to correspond with the numbering of a set of column stops 11 adjustable along a rack 12 provided upon the carriage 4; each column stop formed of a plate of sheet metal and comprising forks 13, 14. It will be understood that there are as many column stops as keys, and that the first column stop is at the right hand end of the rack in Fig. 2, to be the first one available at the beginning of a new line of writing, and intended to be brought into play

by a depression of the first key in the row, which key bears the number "1".

The rear fork 14 of each of the column-stops is lengthened to form a tappet; that on the first column stop being the shortest and that on the last column stop being the longest, and the others in regularly graduated intervening positions. These tappets are in the nature of extensions, to stand in front of the column-stop rack 12, but without interfering with the convenient withdrawal and insertion of the stops on the rack. A single stop 21, in front of the column stops 11, (the latter projecting downwardly from the bottom of the rack) is secured on a rock-shaft 23, mounted on the framework to oscillate forwardly into the path of any of the column stops.

The movement of the paper carriage 4 is caused to project the stop 21 back into the path of any desired column stop. This action occurs at such a point in the travel of the carriage that the stop 21 does not swing until it is immediately approached by the selected column stop, so that there is no liability of engagement thereof with the wrong column stop. This movement of the stop 21 is secured by the cooperation of an interponent device or mechanism, which is brought into position to be actuated by the selected tappet, and when so actuated operates to set the stop 21 immediately in advance of the column stop to which the selected or acting tappet belongs.

An interponent 24 is fixed upon a vertical rock shaft 25 to oscillate forwardly and backwardly; said interponent preferably having a stem 26, whereby it is fixed in a block 27, having a hub 28 fixed upon said vertical rock shaft 25; said block 27 having a vertically lengthened front shoulder 29 to engage a pin 30 projecting horizontally from a pendent arm 30^a of the framework stop 21. When the interponent 24 is engaged by a tappet 14, it is swung forwardly, Figs. 4 and 6. The cam or shoulder 29 presses back the pin 30, and causes the framework stop 21 to oscillate into the path of the column stop device which is in engagement with the interponent 24 to arrest the carriage. The interponent 24 is variably raised by means of the keys 10; the vertical rock shaft 25 for this purpose being journaled in a vertical stud 31 erected upon a bracket 32 carried by a vertical sliding bar 33 lifted by the keys 10, said keys connected to levers 34, the rear ends of which engage a stepped foot 35 formed upon the bottom of the bar 33, as seen in dotted lines at Fig. 1, whereby each key gives said bar a different lift to project the interponent into the path of the associated column stop device. The vertical rock shaft 25, carrying the interponent, is held against displacement by a pin 36 passed through the bottom of the

stud 31 and engaging an annular groove 37 formed on the shaft. A spring 38 coiled around said shaft returns the interponent to normal position upon release of the tabulator keys 10.

From the foregoing, it will be seen that upon the depression of the key 10, the rear end of the lever 34 is thrust up, lifting the carrier bar 33 and projecting the interponent 24 vertically upward into the path of the selected column stop tappet 14; the carriage being simultaneously released, and running forwardly under the influence of the driving spring until the tappet strikes the interponent 24, which is preferably set at an angle to the horizontal path of travel of the carriage, to be cammed forwardly by the tappet, and thereby caused to engage the pin 30 on the framework stop 21, to oscillate the latter rearwardly into the path of the column stop, whereby the carriage is arrested.

The carriage releasing mechanism shown comprises a universal bar 39, a rock shaft 40 having an arm 41 to be engaged by said universal bar, and an arm 42 on said rock shaft connected by a vertical link 43 to a lever 44 having a roll 45 to lift the rack 8, as seen at Fig. 4.

Upon relieving the column stop key from pressure, it is returned to normal position by a spring 46, the carrier 43 being returned by a spring 47, and the framework stop 21 being returned by a spring 48.

At Fig. 7, which is a bottom view of the column stop, it will be seen that the fork 13 is bent out of alinement with the fork 14; the degree of the bend being exaggerated for the purpose of illustration. At Fig. 8 the fork 13 is shown disalined in another manner from the fork 14. When one fork is disalined from the other, it is necessary to force the column stop into the rack, since the teeth of the latter are cut to fit stops having alined forks. The forcing of the stop into the rack tends to straighten the forks into alinement with each other; and since the metal tends to recover its original shape, its resiliency serves to bind the stop upon the rack with sufficient force to prevent danger of the stop jumping out of the rack during the operation of the machine. It will be seen that the outer edge of the tappet fork 14 is rounded by bending back the metal at 14^a, so that it shall not present a sharp corner to the interponent 24, and so as to relieve the binding effect upon the framework stop 21 when the latter is being returned to normal position by the spring.

Variations may be resorted to within the scope of the invention.

Having thus described my invention, I claim:

1. The combination with a carriage having a stop device, of a single-piece stop mov-

able upon the framework, and a single-piece interponent mounted upon the framework and shiftable into the path of said stop device to be moved thereby, and having a cam
5 directly engaging said framework stop to move the latter into the path of said stop device.

2. The combination with a carriage having a stop device, of a stop pivoted upon the
10 framework to oscillate into the path of said carriage stop, an interponent pivoted on an axis which is at a right angle to the pivot of the framework stop, and having a cam formed or provided thereon to engage the
15 framework stop, and means to move said interponent into the path of the carriage stop device to be oscillated thereby and caused to turn the framework stop into the path of said carriage stop device.

3. The combination with a carriage having a stop device, of a stop pivoted upon the framework to oscillate into the path of
20 said carriage stop device, an interponent variably shiftable in a direction at a right angle to the pivot of said framework stop to move the interponent into the path of any selected carriage stop, said interponent
25 pivoted on an axis parallel with the direction of its shifting motion, and keys having means to shift said interponent into the path of any selected carriage stop device to be oscillated thereby, to cause said framework stop to turn into the path of the selected carriage stop device, said cam extended in the direction of the shifting movement of said interponent, so that oscillation of said interponent at all positions to which it is shifted may operate the framework stop.

4. The combination with a carriage having a series of stop devices disposed in echelon, of a carrier variably movable by a set of keys, an interponent pivoted upon said carrier in a direction to swing across
45 the path of movement of the carriage stop devices, and movable by said carrier into the path of any selected stop device to be oscillated thereby, and a stop mounted upon the framework to be engaged by said interponent at any point to which the latter may be set by the keys, and caused to move into the path of the selected carriage stop.

5. The combination with a carriage having a series of stop devices disposed in
55 echelon, of a carrier variably movable by a set of keys, an interponent pivoted upon said carrier in a direction to swing across the path of movement of the carriage stop devices, and movable by said carrier into the path of any selected stop device to be oscillated thereby, and a stop mounted upon the framework to be engaged by said interponent, and caused to move into the path of the selected carriage stop, said framework stop pivoted to oscillate across the

path of travel of the carriage stops, and having a part engageable by a cam on said oscillating stop to be moved thereby, said cam elongated or widened in the direction of the axis about which it turns, to enable
70 it to be effective in all positions to which it may be adjusted by the keys.

6. The combination with a horizontally moving carriage, of a stop thereon, a tappet also on the carriage, a key upon the framework, an interponent mounted to oscillate
75 about a vertical axis and movable in a direction vertical to the direction of the carriage movement and into the path of the tappet to be oscillated by the latter, and a stop mounted upon the framework to oscillate upon an axis which is parallel to the direction of travel of the carriage, said interponent having means to turn said oscillating stop into the path of the stop on the
85 carriage.

7. The combination with a horizontally moving carriage, of a series of stops, each provided with a tappet, the tappets being disposed in echelon, a set of keys, an interponent mounted to oscillate about an axis
90 which is vertical to the direction of travel of the carriage and movable variable distances by said keys in the direction of said axis and into the path of any selected tappet, to be oscillated by the latter, and a stop mounted upon the framework to oscillate upon a horizontal axis, said interponent having means effective at all points in its said vertical movement to turn said oscillating
100 stop into the path of the selected carriage stop.

8. The combination with a power-driven carriage having a series of stop devices arranged in echelon in a horizontal row, of
105 an oscillating stop mounted upon the framework and extending upwardly to engage the stop devices, but normally out of the path thereof, a depending arm upon said framework stop, an upstanding vertically shiftable carrier, an interponent mounted upon a vertically disposed pivot on said carrier and shiftable thereon various distances to engage different stop devices on the carriage to be swung thereby, a cam being formed or
115 provided on said interponent to engage said depending arm at all positions to which the interponent may be shifted, to swing said framework stop into the path of the active carriage stop device, and a carriage-release
120 ing mechanism.

9. The combination with a power-driven carriage having a series of stop devices arranged in a horizontal row, of an oscillating stop mounted upon the framework and
125 extending upwardly to engage the stop devices, but normally out of the path thereof, a depending arm upon said framework stop, an upstanding vertically shiftable carrier, an interponent mounted upon a vertically
130

disposed pivot on said carrier and shiftable thereon various distances to engage different stop devices on the carriage to be swung thereby, a cam being formed or provided on
5 said interponent to engage said depending arm at all positions to which the interponent may be shifted, to swing said framework stop into the path of the active carriage stop device, and a carriage-releasing mechanism,

said carriage stop devices being mounted 10 on a rack and each stop being in the form of a forked member, one member of the fork being lengthened, and the lengthened members being disposed in echelon.

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Witnesses:

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