

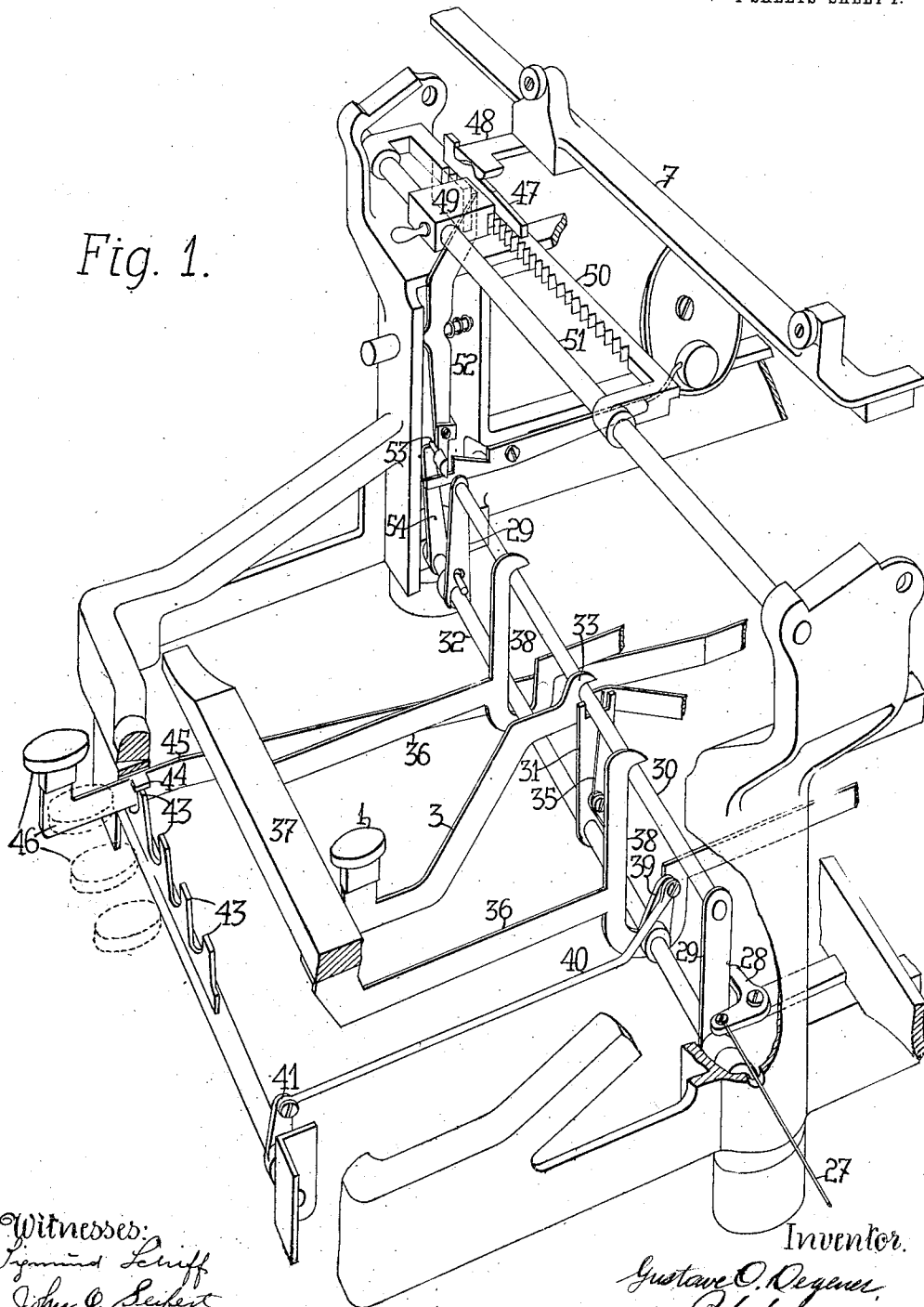
G. O. DEGENER.
 COMBINED TYPE WRITING AND ADDING MACHINE.
 APPLICATION FILED OCT. 20, 1909.

990,238.

Patented Apr. 25, 1911.

4 SHEETS—SHEET 1.

Fig. 1.



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Fig. 2.

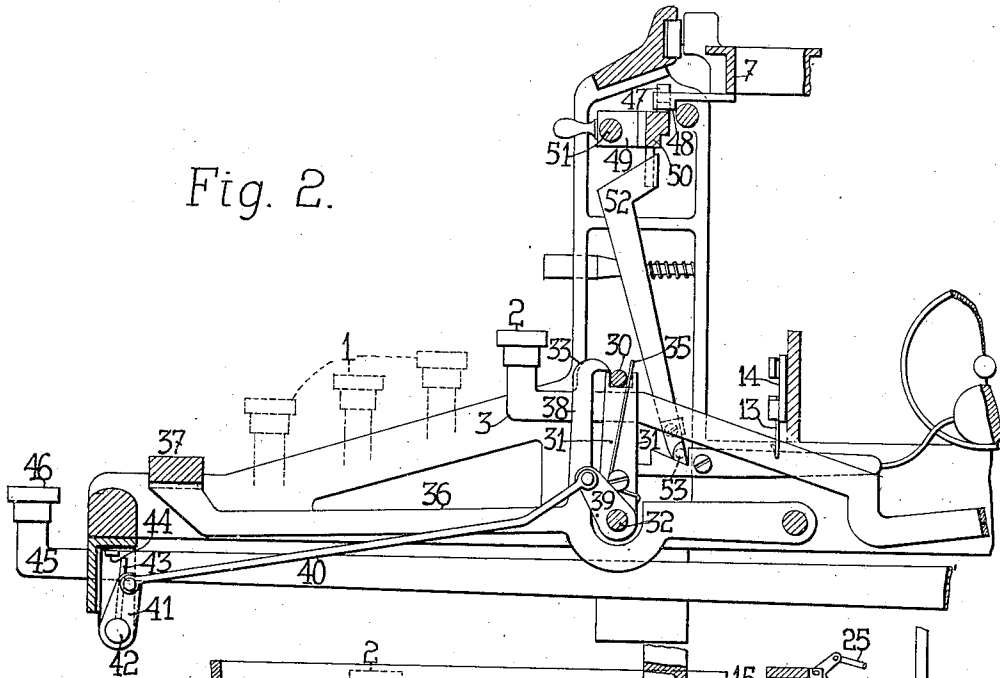


Fig. 3.

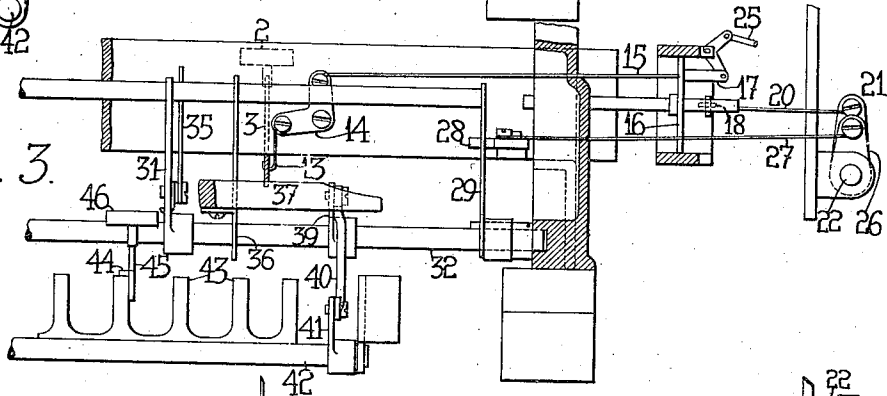
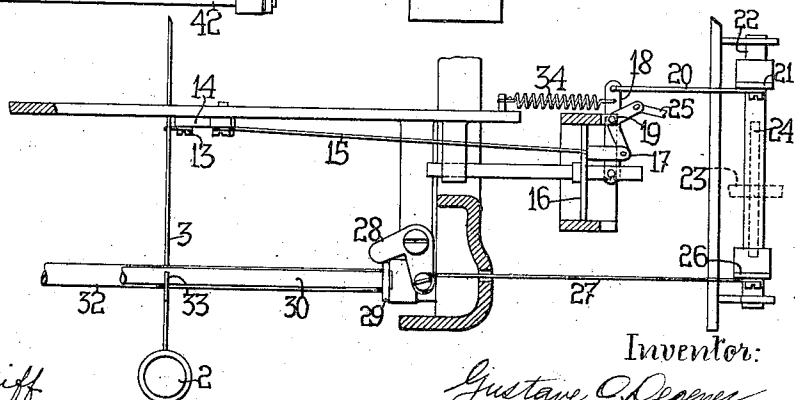


Fig. 4.



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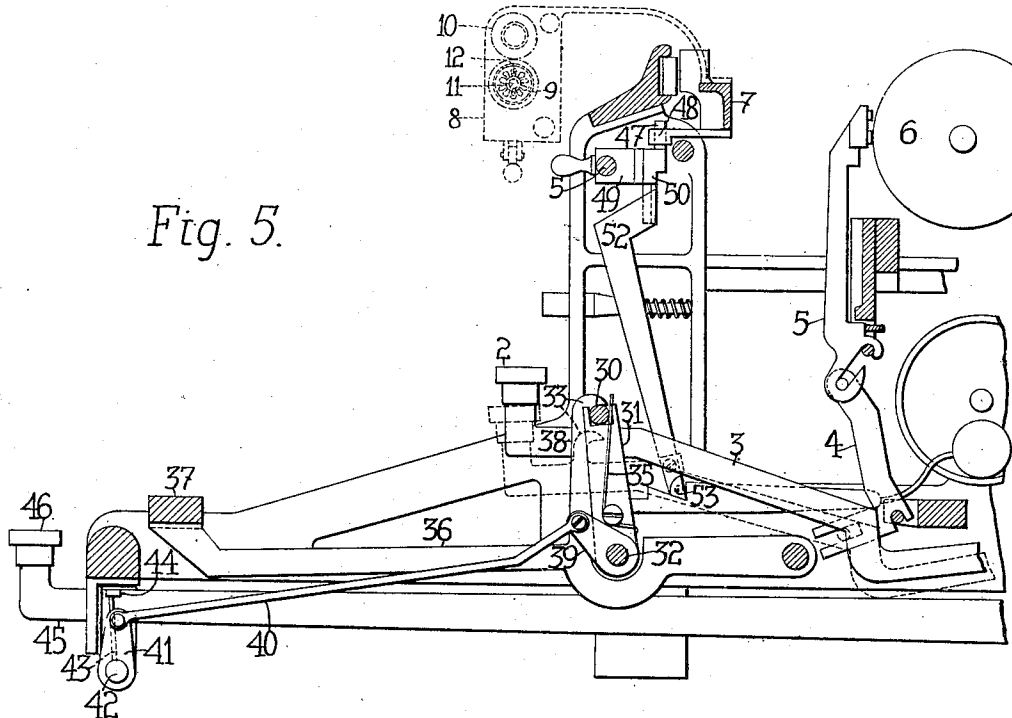
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4 SHEETS—SHEET 3.



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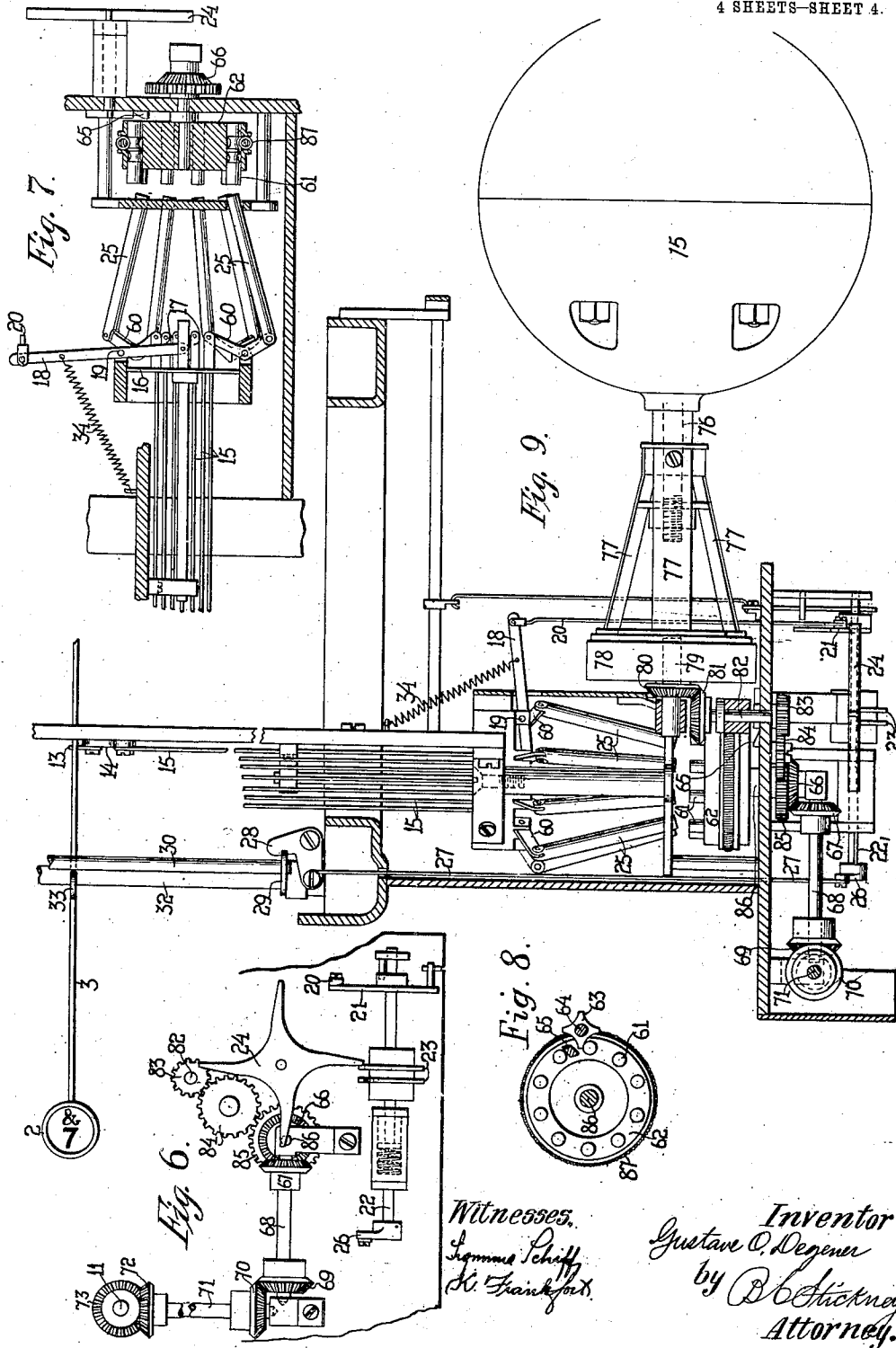
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4 SHEETS—SHEET 4.



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UNITED STATES PATENT OFFICE.

GUSTAVE O. DEGENER, OF NEW YORK, N. Y., ASSIGNOR, BY MESNE ASSIGNMENTS, TO UNDERWOOD COMPUTING MACHINE COMPANY, OF NEW YORK, N. Y., A CORPORATION.

COMBINED TYPE-WRITING AND ADDING MACHINE.

990,238.

Specification of Letters Patent. Patented Apr. 25, 1911.

Application filed October 20, 1909. Serial No. 523,683.

To all whom it may concern:

Be it known that I, GUSTAVE O. DEGENER, a citizen of the United States, residing in New York city, in the county of New York and State of New York, have invented certain new and useful Improvements in Combined Type-Writing and Adding Machines, of which the following is a specification.

This invention relates to combined adding and typewriting machines, especially those of the class set forth in the pending application of Walter Wright, No. 485,030 filed March 22, 1909. In said application the adding wheels are power driven, and their movements are controlled by means of an escapement mechanism operated by the keys and permitting the adding wheel movements. Such escapement mechanism operates partly during the down stroke of the figure key, and partly during the up stroke thereof. At the up stroke of the key, the paper carriage is released for its letter-feeding movement, and at the same time the carriage of the adding mechanism is fed; said adding mechanism being connected to the paper carriage to travel therewith. If the paper carriage and adding mechanism should feed prematurely, that is, before the completion of the rotation of the adding wheel, the consequence would be that an error would be made in the addition.

One of the principal objects of the present invention is to prevent all possibility of such premature feeding of the carriage. This might occur by depressing a second key before entirely releasing the first key, or by depressing the key which makes the space between words before completely releasing the figure key, or by prematurely operating a tabulating key. In any of these cases, the carriage would be released for an advance movement and an error would be made in addition, or the adding mechanism would become liable to get out of order. To overcome these liabilities, I provide means for enabling any of the figure keys of the typewriting machine, that is, the adding keys of the adding machine, to prevent any advance movement of the paper carriage, or the adding mechanism connected thereto, until such figure key resumes or nearly resumes its normal elevated position, after depression. This result is accomplished by providing locking devices normally idle but movable by any of the figure keys into posi-

tions to lock not only the remaining figure keys but also any other key that controls the carriage, inclusive of the remaining type keys, the word spacing key and the tabulating keys.

The invention is shown as applied to an Underwood front strike writing machine, and the locking of the type keys and the word-spacing key is preferably effected by means of the same bar that usually in said machine serves to lock the keys at the completion of the line of writing. Each key lever in said machine is provided with a hook, and at the end of a line of writing the carriage causes the locking bar to swing to a position beneath all of said hooks or lugs, so that the keys cannot be operated.

I provide independent means connected to the adding mechanism for operating this locking bar at every stroke of the figure keys. So long as the figure key is depressed no other key (that is no other carriage feeding key) can be operated. For this purpose, the levers which carry the word-spacing key are also provided with hooks. Said locking bar is usually mounted upon a rock shaft, and to said rock shaft is connected a second rock shaft having stops which are swung simultaneously into the path of lugs provided on the depressible tabulating keys of the Underwood typewriting machine, so that said tabulating keys cannot be operated while any figure or adding key is in operation.

Other features and advantages will hereinafter appear.

In the accompanying drawings, Figure 1 is a perspective view of the front part of the frame of an Underwood typewriter, showing in normal positions the principal portions of the present improvements. Fig. 2 is a sectional side elevation, showing the same parts as at Fig. 1. Fig. 3 is a sectional front elevation, showing the key mechanism, and a portion of the adding devices shown in said application. Fig. 4 is a sectional plan of the parts seen at Fig. 3. Fig. 5 is a view similar to Fig. 2, showing a figure key depressed to print a figure type, and also showing the locking devices swung to effective positions. Fig. 6 is a side elevation of a key-controlled escapement wheel and associated mechanism of one form of computing machine. Fig. 7 is a sectional plan of a primary escapement wheel of the adding

mechanism, and key-operated means for setting the pins of said primary escapement wheel. Fig. 8 is a part sectional elevation of a primary escapement wheel. Fig. 9 is a sectional plan showing connection to the typewriter keys of the escapement wheel and appurtenances of the computing mechanism.

In the Underwood machine alphabetical keys 1 and figure keys 2 are mounted upon levers 3 connected to elbow levers 4, the latter swinging type bars 5 against a platen 6 mounted upon a carriage 7. Connected to said carriage, to travel therewith, is a carriage 8 (marked 159, Fig. 1 of said application), containing adding wheels 9 and figure wheels 10. The adding wheels are driven by an internal shaft 11 carrying a master wheel having two teeth and marked 12. The master wheel shaft 11 is constantly urged in a direction to turn the adding wheels. The movements of said master wheel shaft are however controlled by the figure keys, which for this purpose are connected by vertical links 13, Figs. 3 and 4, bell cranks 14 and horizontal links 15 to a universal bar 16, which controls the rotation of the master wheel shaft. Each link 15 is in the form of a wire extending through a perforation in the universal bar or disk 16, and carries on its right hand end a head 17, by which it moves the universal bar to the left. The universal bar acts through a lever 18 (pivoted at 19) and link 20, to swing an arm 21 mounted upon a rock shaft 22, upon which are fixed escapement dogs 23, corresponding somewhat in operation and function to the escapement dogs of an ordinary typewriter carriage. These dogs control the movements of an escapement wheel 24. Said escapement wheel 24 controls the movements of a variable escapement wheel having a series of pins which may be set by the keys. This variable escapement wheel is connected by a train of gearing to the master wheel shaft 11.

From an arm 26 fixed upon the rock shaft 22 is extended to the left a horizontal link 27, the inner end thereof being pivoted to a bell crank having an arm 28 to engage an upstanding arm 29 usually carrying the key-locking bar 30 in said Underwood machine; said bar being supported by a series of arms 31 rising from a rock shaft 32 upon which they may be fixed; such key-locking bar 30 forming part of the usual line-locking mechanism, and being adapted to catch under hooks 33 formed on the type-operating levers. The bell crank arm 28 merely bears against the rear edge of the arm 29, and hence does not prevent the operation of the latter by the paper carriage at the end of a line of writing.

Whenever any figure key is depressed the link 13 is pulled down and the bell crank 14

is turned, pulling the link 15 to the left, together with the head 17 and the universal bar or disk 16, the latter through the lever 18 and link 20 operating the rocking arm 21 and rock shaft 22. The arm 26 on said rock shaft is swung to the right, and pulls the link 27 in the same direction, thereby causing the bell crank arm 28 to swing forwardly and press the lock-bar carrying arm 29 together with the locking bar 30 forwardly to the position at Fig. 5, thereby locking all of the type-operating key levers against actuation. The top of the hook 33 is sufficiently beveled to enable it to clear bar 30 during the depression of the key, said bar swinging forwardly over the depressed hook and beneath the other hooks, as at Fig. 5. Upon releasing the key 2 from pressure, the escapement dogs 23 are vibrated by a spring 34 back to normal positions, thereby permitting a rotation of the escapement wheel 24, and hence through suitable mechanism permitting the master wheel shaft 11 to rotate to a distance determined by the figure key. During such return of the key, the type bar swings back to normal position, and the locking bar 30 is also returned to the idle Fig. 2 position by means of a spring 35.

I provide the levers 36 of the word-spacing key 37 with hooks 38 to be intercepted by the locking bar 30, whereby feeding of the carriages 7 and 8, by a premature depression of the word-spacing key 37, is avoided.

To an arm 39, fixed upon the rock shaft 32, is connected the rear end of a link 40; the forward end thereof attached to an arm 41 fixed upon a rock shaft 42 and carrying a series of stops 43 normally escaping a series of lugs 44 projecting from the sides of depressible levers 45 carrying carriage-releasing tabulating keys 46, such as commonly employed on said Underwood typewriting machine. At each depression of a figure key, the rocking of the shaft 32 causes a corresponding movement of the arm 39, link 40, arm 41, rock-shaft 42 and locking stops 43, the latter being swung to positions directly beneath all of the locking lugs 44, so as to intercept them, and prevent the depression of any tabulating key 46, and hence any advancing movement of the carriages 7 and 8, until the adding key 2 returns to normal position, or in other words, until the adding operation is completed.

The line-locking mechanism of the Underwood machine usually comprises a compound cam 47, engageable by a lug 48 on the carriage 7, said cam mounted upon an adjustable block 49, the latter supported upon a rocking frame comprising a rack bar 50 and a rock shaft 51. During the travel of the carriage, the lug 48 acts upon the cam 47 to swing the rocking frame and vibrate

forwardly a pendent arm 52, the latter having a pin or projection 53 to engage an arm 54 erected upon the line-locking rock-shaft 32.

5 The operation of the adding mechanism will be understood by reference to Figs. 2 to 9. The keys 2 pull down the links 13, Fig. 3, to vibrate the bell cranks 14, and pull the links 15 to the left. Each link 15 vibrates a bell crank 60, and thrusts a jack 25 to the right, the ends of these jacks being disposed in a circle. The ends of escapement pins 61 are also arranged in a circle on a power-driven escapement wheel 62. 10 Any of the pins 61, when projected to the right from the wheel 62, is ready to engage and rotate a four-toothed pinion 63, Fig. 8, which is fixed by a shaft 64 to the secondary escapement wheel 24. The escapement 20 movements of the latter are permitted by the universal bar 16, lever 18, link 20, shaft 22 and dogs 23. The variable movement of the primary escapement wheel 62 is determined by the successively projected pins 61; but the movement of the secondary escapement wheel 24 is uniform at each computing operation. A fixed cam 65 returns the pins 61 after they pass the pinion 63.

The primary escapement wheel 62 is provided with a bevel pinion 66 meshing with a bevel pinion 67 on horizontal shaft 68, which also carries bevel pinion 69 to mesh with bevel pinion 70 on the bottom of a vertical computing shaft 71. The top of 35 this shaft carries a bevel pinion 72 to mesh with a bevel pinion 73 which is fixed upon or turns the master wheel shaft 11, the extent of the rotation of said master wheel shaft depending upon the interval between the escapement pin 61 which was last projected by a key 2, and the pinion 64.

The computing mechanism is driven by a motor 75, the shaft 76 of which carries a part 77 of a friction clutch, the other part 45 78 of said clutch being fixed upon a shaft 79 upon which is a bevel pinion 80. This pinion 80 meshes with a bevel pinion 81, upon a short horizontal shaft 82, the latter carrying at its outer end a pinion 83, which is 50 connected by an idle pinion 84 to a gear 85 fixed on the shaft 86 of the variably-moving primary escapement wheel 62. The pins 61 are held in both normal and projected positions by a helical spring 87, forming an 55 annulus carried upon the wheel 62.

Whenever the dogs 23 are reciprocated, the wheel 24 escapes, being driven by the clutch 78 and the motor 75. During this movement of 24, the pinion 63 is driven 60 through a quarter of a revolution by the projected pin shown in engagement therewith at Fig. 8; and the last projected pin 61 then comes into contact with the succeeding tooth of pinion 63, thereby rotating 65 wheel 24 as aforesaid, until it is arrested by

one of the dogs 23. The movement of the wheel 62 just described is communicated through the gears 66, 67, etc. to the master wheel and to the computing wheels. The escapement of the wheel 24 takes place on 70 the return movement of the dogs 23, that is, on the upstroke of the key 2.

It will be seen that in the present form of the invention, the desired result of preventing accidental forward movement of the 75 carriage is secured by means of a very simple and inexpensive device added to the usual line-locking mechanism; although the invention may be carried out in other ways, and portions of the improvements may be 80 used without others.

Having thus described my invention, I claim:

1. In a combined typewriting and adding machine having a paper carriage and keys 85 to feed said carriage, including keys for operating types, and a key for spacing the carriage between words, said type-operating keys including a set of figure keys, the combination with adding devices connected 90 to said carriage and controlled by said figure keys during both the downward and the return strokes of the latter, of means for enabling any figure key to lock all of the remaining type keys and also said space key 95 against operation until the completion of the movements of the adding devices.

2. In a combined typewriting and adding machine having a paper carriage and keys 100 to feed said carriage, including (1) keys for operating types, (2) a key for spacing the carriage between words, and (3) tabulating keys, said type-operating keys including a set of figure keys, the combination with adding devices connected to said carriage 105 and controlled by said figure keys during both the downward and the return strokes of the latter, of means for enabling any figure key to lock the remaining type keys and said space key and said tabulating keys 110 against operation until the completion of the movements of the adding devices.

3. In a combined typewriting and adding machine having a paper carriage and keys 115 to feed said carriage, including keys for operating types and a key for spacing the carriage between words, said type-operating keys including a set of figure keys, the combination with adding devices connected to said carriage and controlled by said figure 120 keys, during both the downward and the return strokes of the latter, of a locking bar, and means for enabling any figure key to operate said bar to lock all the remaining type keys and the spacing key against op- 125 eration.

4. In a combined typewriting and adding machine having a paper carriage and keys 130 to feed said carriage, including keys for operating types, and a key for spacing the

carriage between words, said type-operating keys including a set of figure keys, the combination of adding devices connected to said carriage and controlled by said figure keys during both the downward and the return strokes of the latter, said adding devices including a universal member actuatable by all of said figure keys, a locking bar connected to said universal member, and means to enable said locking bar to lock against actuation all of the remaining type keys and said space key.

5. In a combined typewriting and adding machine having a paper carriage and keys to feed said carriage, including (1) keys for operating types (2) a key for spacing the carriage between words, and (3) tabulating keys, said type-operating keys including a set of figure keys, the combination of adding devices connected to said carriage and controlled by said figure keys during both the downward and return strokes of the latter, and said adding devices including a universal member actuatable by all of said figure keys, a locking bar connected to said universal member, and means to enable said locking bar to lock against actuation all of the remaining type keys, said space key, and said tabulating keys.

6. In a combined typewriting and adding machine having a paper carriage and keys to feed said carriage, including keys for operating types and a key for spacing the carriage between words, said type-operating keys including a set of figure keys, the combination of adding devices connected to said carriage and controlled by said figure keys during both the downward and the return strokes of the latter, said adding devices including a universal member actuatable by all of said figure keys, a locking bar, and hooks or lugs on all of said type keys and said spacing key; said locking bar connected to said universal member to be moved thereby to intercept all of said hooks or lugs except that of the depressed figure key.

7. In a combined typewriting and adding machine having a paper carriage and keys to feed said carriage, including (1) keys for operating types (2) a key for spacing the carriage between words, and (3) tabulating keys, said type-operating keys including a set of figure keys, the combination with adding devices connected to said carriage and controlled by said figure keys during both the downward and the return strokes of the latter, said adding devices including a universal member actuatable by all of said figure keys, of a locking bar for all of said figure keys and said space key, and a locking bar for said tabulating keys, both of said locking bars connected to said universal member to be moved thereby to effective positions.

8. In a combined typewriting and adding

machine having a paper carriage and keys to feed said carriage, including (1) keys for operating types (2) a key for spacing the carriage between words, and (3) tabulating keys, said type-operating keys including a set of figure keys, the combination of adding devices connected to said carriage and controlled by said figure keys, said adding devices including a universal member actuatable by all of said figure keys, a locking bar for all of said figure keys and said space key, said locking bar mounted on a rock shaft and connected to said universal member to be moved thereby to effective position, and a second rock-shaft connected to the first and carrying a bar for locking said tabulating keys.

9. In a combined typewriting and adding machine having a paper carriage and keys to feed said carriage, including a set of figure keys, the combination with adding devices connected to said figure keys, said adding devices including a universal member actuatable by all of said figure keys, of a line-locking mechanism including a bar controlled by said carriage to lock all of the type keys against actuation at the completion of a line of writing, and means for enabling said universal member at every stroke to actuate said locking bar.

10. In a combined typewriting and adding machine having a paper carriage and keys to feed said carriage, including keys, for operating the types and a key for spacing the carriage between words, said type operating keys, including a set of figure keys, the combination with adding devices connected to said figure keys, said adding devices including a universal member actuatable by all of said figure keys, of a line-locking mechanism including a bar controlled by said carriage to lock all of the type keys against actuation at the completion of a line of writing, means for enabling said universal member at every stroke to actuate said locking-bar, and means for enabling said bar to lock said space key.

11. In a combined typewriting and adding machine having a paper carriage and keys to feed said carriage, including (1) keys for operating the types, (2) a key for spacing the carriage between words, and (3) tabulating keys, said type-operating keys including a set of figure keys, the combination with adding devices connected to said figure keys, said adding devices including a universal member actuatable by all of said figure keys, of a line-locking mechanism including a bar controlled by said carriage to lock all of the type keys against actuation at the completion of a line of writing; means for enabling said universal bar to actuate said locking bar at each stroke of any figure key, means to enable said bar to lock said space key, and a second locking bar con-

connected to said universal member for simultaneously locking said tabulating keys.

12. In a combined typewriting and adding machine having a paper carriage and keys to feed said carriage, including keys for operating the types, and tabulating keys, said type-operating keys including a set of figure keys, the combination with adding devices connected to said figure keys, said adding devices including a universal member actuable by all of said figure keys, of a line-locking mechanism including a bar controlled by said carriage to lock all of the type keys against actuation at the completion of a line of writing, means for enabling said universal bar to actuate said locking bar at each stroke of any figure key, and a second locking bar connected to said universal member for simultaneously locking said tabulating keys; the latter having lugs, and said second locking bar having a series of interceptors to move into the paths of the lugs.

13. A combined typewriting and computing machine having type-operating keys including alphabet keys and numeral keys, a carriage, and carriage-feeding mechanism controlled by all of said keys and provided with computing devices and means to lock the alphabet keys, said computing devices and said locking means being solely under the control of said numeral keys; said computing devices including a member connected to said carriage to travel therewith.

14. In a combined typewriting and computing machine, having type-operating keys including alphabet keys and numeral keys, the combination with computing devices op-

erable only by said numeral keys, and a universal device or member also operable only by said numeral keys, of means connected to said universal device or member, to enable any of said numeral keys to lock against actuation the remaining numeral keys and all the alphabet keys.

15. In a combined typewriting and adding machine having a paper carriage and type-operating keys including a set of figure keys, the combination of adding devices connected to said carriage and controlled by said figure keys during both the downward and the return strokes of the latter, said adding devices including a universal member actuable by all of said figure keys, a locking bar connected to said universal member, and means to enable said locking bar to lock against actuation all of the remaining type keys.

16. In a combined typewriting and adding machine having a paper carriage and type-operating keys including a set of figure keys, the combination of adding devices connected to said carriage and controlled by said figure keys during both the downward and the return strokes of the latter, said adding devices including a universal member actuable by all of said figure keys, a locking bar, and hooks or lugs on all of said type keys; said locking bar connected to said universal member to be moved thereby to intercept all of said hooks or lugs except that of the depressed figure key.

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