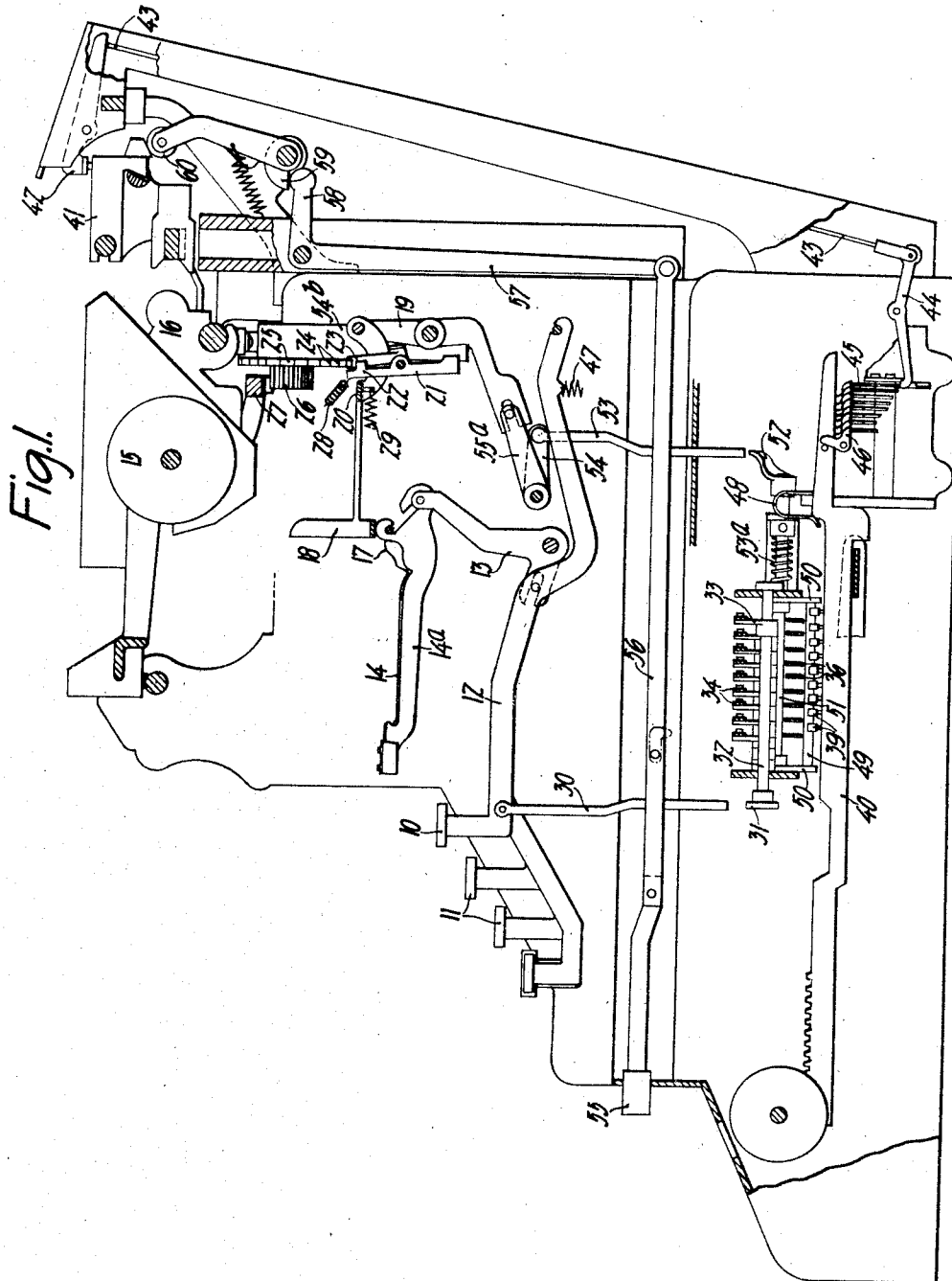


B. C. STICKNEY.
 COMBINED TYPEWRITING AND COMPUTING MACHINE.
 APPLICATION FILED NOV. 1, 1918.

1,370,239.

Patented Mar. 1, 1921.

2 SHEETS—SHEET 1.



Inventor:

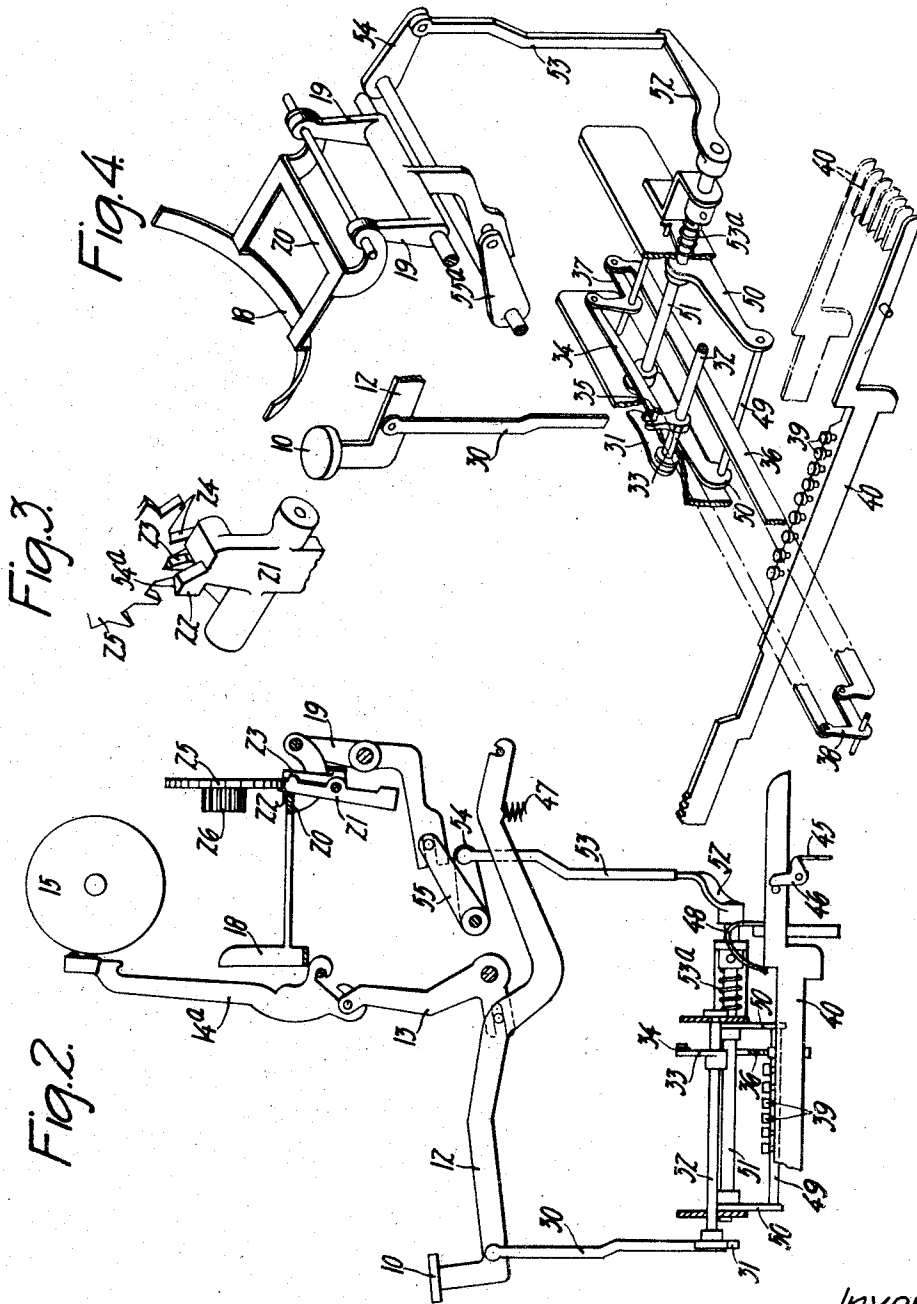
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Inventor:

Burnham C. Stickney

UNITED STATES PATENT OFFICE.

BURNHAM C. STICKNEY, OF ELIZABETH, NEW JERSEY, ASSIGNOR TO UNDERWOOD COMPUTING MACHINE COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

COMBINED TYPEWRITING AND COMPUTING MACHINE.

1,370,239.

Specification of Letters Patent.

Patented Mar. 1, 1921.

Application filed November 1, 1918. Serial No. 260,626.

To all whom it may concern:

Be it known that I, BURNHAM C. STICKNEY, a citizen of the United States, residing in Elizabeth, in the county of Union and State of New Jersey, have invented certain new and useful Improvements in Combined Typewriting and Computing Machines, of which the following is a specification.

10 This invention relates generally to combined adding and typewriting machines, and is of special value in those machines in which indexing pins or devices are set up at the operation of the numeral keys and are
15 subsequently carried into a totalizer or register; an example of this class of machine being the well-known Underwood book-keeping machine which is illustrated in the patent to Minton, 1,280,065, and other
20 patents.

The indexing pins are usually arranged nine in a row, each row representing a different denomination. Independently operable pin-setting bars are arranged trans-
25 versely above the index pins, one bar connected to each numeral key, so that any key can set a pin in any row. All of these pins are normally out of range of these setting bars; but through suitable mechanism
30 the typewriter carriage operates to project the pin rows one at a time into the paths of the setting bars. Hence, the selection of an indexing pin depends partly upon the position of the typewriter carriage, and partly
35 upon the selection of the key. Springs return the setting bars and the pin bars after the pin-setting operation. When all of the pins have been set up for a number, a general operator is usually employed to advance all of the dial wheels simultaneously,
40 each to an extent determined by the described setting of the pin in its associated row.

In practice, it is important to guard
45 against erroneous setting of the index pins, since errors of this kind are difficult if not impossible to detect. One source of possible error is found in the liability of the depressed pin-setting bar acting to obstruct
50 the movement of one or two of the bars which carry the rows of index pins. The setting bar may either obstruct the return

of the bar upon which a pin has just been set; or the setting bar may obstruct the advance of the bar of next lower denomination, which at the moment is being advanced by means of the train of mechanism which connects it to the typewriter carriage. In either case an error is liable to occur, since all of the pins must be in their intended places at the operation of the setting bar, as otherwise a wrong pin may be set.

This liability of the setting bar to hinder the advance or return of the pin-carrying bars, is due to failure of the pin-setting bar to rise or return to normal position with sufficient promptness at the release of the type-key. One of the main objects of the present invention, therefore, is to improve the machine, by providing improved and reliable means for returning the pin-setting bars or devices to normal positions.

It should be explained at this point that the numeral keys referred to operate type-bars to print the numbers upon the worksheet, and that the letter-feeding movement of the typewriter carriage is controlled by the numeral keys, as well as by the alphabet keys of the typewriter. In the Underwood machine, all of the type-bars are provided with heels which operate a curved universal bar, which controls the feeding dogs that cooperate with the escapement wheel of the carriage.

In carrying out the present invention in its preferred form, the heels of the numeral type-bars "1" to "9" are omitted, so that said type-bars cannot operate the universal bar, and hence cannot feed the carriage. The numeral type-keys, however, actuate other means for operating the typewriter universal bar, which will now be explained. Each of said numeral keys operates a linkage or train of mechanism, of which one of the aforesaid pin-setting bars forms a part; and there is provided in the adding machine a special universal bar, which is operable by these trains, either by direct engagement with these setting bars or otherwise. This special universal bar is connected by a driving train to the universal bar of the typewriter, and hence the operation of any numeral key is effective, through its pin-setting train, to actuate the special universal

bar, and thereby the typewriter universal bar, so that not only is the typewriter carriage fed, but the ink ribbon is also elevated in front of the platen, and other functions of the typewriter are performed.

The reason that an advantage is gained in operating the typewriter universal bar by means of the pin-setting linkages is that said typewriter universal bar cannot return to normal position without simultaneously restoring the special universal bar to normal position, together with the pin-setting linkage which has just been actuated by its type-key. So instead of depending upon a more or less weak spring, as has been the custom, for returning the pin-setting linkage, the same is connected up to the universal bar of the typewriter, which is returned by a powerful spring. Moreover, the special universal bar may be aided substantially by a powerful camming action between the escapement wheel of the typewriter and the detent dog with which said escapement wheel temporarily engages at the letter-feeding movement of the carriage. The driving spring or motor which propels the typewriter carriage may therefore be utilized by the described train of mechanism, to aid in restoring the pin-setting or indexing linkage to normal position, and hence the same is restored quickly and with certainty. If through any impediment or accident any linkage should not be restored, it follows that the typewriter universal bar would not be restored, and hence the typewriter carriage would not feed at the succeeding key operations, and the type-impressions would therefore be piled up on one another, and thereby inform the operator of the impediment. Hence no error from the above source is apt to be made unless the operator is made fully aware of the failure of the pin-setting linkage to return. Hence the operation of the adding mechanism is safeguarded.

Again, if through any accident or looseness of parts, the setting-bar should not operate properly, then the typewriter universal bar will not be operated correctly, so that the carriage will not feed as it should, and the letters will not print properly on the sheet, and the keys may even be obstructed, thus in several ways warning the operator.

Sometimes the machine is used only for typewriting, and it is of course desirable for the numeral keys to operate the typewriter universal bar when no addition is to be performed. The cutting away of the heels on the numeral type-bars, so that they cannot operate the typewriter universal bar, will not prove to be a drawback when the adding mechanism is silenced, since these numeral keys will continue as before to operate the pin-setting linkages, and thereby operate the typewriter universal bar, even

though no pins are set. The adding mechanism is silenced by effecting a disconnection between the typewriter carriage and the denomination trains which advance or displace one by one the rows of index pins, so that all of the index pins remain stationary out of range of any of the pin-setting bars. Hence, all of the operations of typewriting may proceed whether computation is being performed or not.

In the accompanying drawings.

Figure 1 is a sectional side elevation from front to rear of a combined typewriting and computing machine of the Underwood-Hanson type, showing the present improvements in one form. The parts are in normal positions.

Fig. 2 shows some of the parts seen at Fig. 1, with one of the numeral keys depressed to cause its type to print, and also to set an index pin.

Fig. 3 is a perspective detail of a dog-camming device usually employed in connection with the carriage of the Underwood typewriter, and seen at other views.

Fig. 4 is a perspective rear view to illustrate the operative connections between a numeral type-key and the type-writer universal bar mechanism.

The typewriting mechanism usually comprises numeral keys 10, alphabet keys 11, key levers 12, sub-levers 13, and type-bars 14, which swing up against a platen 15 which is mounted upon a carriage 16. The alphabet type-bars have heels 17 to operate a universal bar or frame 18, which is usually carried at its rear portion upon rock arms 19, and has means 20 to engage a dog rocker 21, comprising a pair of dogs 22, 23, which move into and out of engagement with the teeth 24 of the escapement wheel 25, the latter connected by a pinion 26 and rack 27 to the typewriter carriage 16. The dog rocker is provided with a returning spring 28, and the universal bar is also provided with a returning spring 29. The numeral type-bars 14^a, with the exception of the "0" type-bar, have no means to operate the universal bar 18, the heels 17 being cut away from these bars.

The adding or computing mechanism comprises stems 30 pendent from the numeral keys "1" to "9", in position to descend and engage at their lower ends rock arms 31 mounted upon the forward ends of shafts 32, which extend forwardly and rearwardly, said shafts carrying a set of driving arms 33 which operate pin-setting linkages, of which there are nine, one for each numeral or digit key. These linkages comprise upper sets of transverse horizontal bars 34, having pins 35 which are engaged by said driving arms 33, and also comprise lower sets of horizontal transverse arms or bars 36, which are the pin-setting bars above

referred to. These bars 34, 36 are connected by bell-cranks 37, 38 at their left-hand and right-hand ends, to form parallel motions or linkages. Whenever a key is depressed, the linkage is moved thereby in a direction to depress the bottom bar 36; whose function is to engage the corresponding index pin 39 in any of the rows into which the set of index pins is divided. Each row of index pins is carried upon a separate bar 40, which extends forwardly and rearwardly of the machine, there being nine pins upon each bar, one for each digit. The pins in each row are separated sufficiently to permit the pin-setting or indexing bar to pass down idly between the pins. If, however, one of the pin-carrying bars 40 is previously set forward, the descending pin-setting bar 36 will engage and depress the pin 39 which is in its path, as set forth in said Patent 1,280,065.

The setting forward or displacing of the pin-carrying bars 40 one by one is effected by means of a dog 41, which is mounted upon the typewriter carriage 16 in a position to traverse a set of jacks 42, which are engaged one after another by said dog. Each jack is vibrated by the dog, and thereby sets forward the associated pin bar 40, to which it is usually connected by means of a link 43, a lever 44, a transposition device 45 and a bell-crank 46.

It has been the practice to restore the numeral keys to normal positions by means of springs 47, and the pin-bars 40 by means of springs 48, these springs being in practice of relatively light tension. There is herein provided a novel returning device for the pin setting linkages, consisting of a universal bar 49 extending fore and aft of the machine, and operable by any of the pin-setting bars 36. This bar may be used either alone or in connection with some or all of the usual linkage returning springs (not shown). Said universal bar 49 may be conveniently carried upon arms 50, which are carried by a shaft 51, thereby forming a veil or rocking frame; and an arm 52 may extend from said frame in position to drive upwardly a thrust link 53, which, at its upper end, is pivotally connected to a lever 54 which is usually found in the typewriting machine, and has a driving connection by means of an arm 55^a with the rock arm or frame 19 which carries the typewriter universal bar 18, so that at the operation of any numeral key said typewriter universal bar or frame is given its customary backward movement. The link 53, like the key stems 30, may be disengaged at its lower end, or not attached to arm 52, for convenience in lifting the typewriter off from the adding machine.

By this means, it results that at the release of the numeral key the typewriter universal bar or frame 18 re-acts upon the special universal bar frame 49, and thereby upon the pin-setting bar 36 which at the moment is in engagement with said special universal bar. Hence, the pin-setting bar is urged back to normal position not only by the spring 53^a coiled around shaft 51 and connected therewith, but also by the typewriter universal bar spring 29, and also by the dog-rocker spring 28, preferably augmented by the power of the carriage-driving spring or motor 54^b. It is usual in the Underwood typewriter for the detent dog 22 of the escapement mechanism to be beveled at 54^a (Fig. 3) in such a manner that the pressure thereon by any tooth 24 of the escapement wheel 25 urges said dog back to normal position, and thereby urges the typewriter universal bar 18 back to normal position. Hence, through the described train of connections, the special universal bar 49 is urged back to normal position together with the active pin-setting bar 36. Through these various instrumentalities, the pin-setting bar may be restored promptly and with certainty, and hence proper clearance between said bar and the index pins 39 is assured, so that there will be no interference either with the return of one pin-carrying bar 40 to normal position, or with the advance of the succeeding pin-carrying bar to setting position. It will be perceived, further, that the usual impulse derived through the bevel 54^a (Fig. 3) from the typewriter carriage, to aid in returning the type-key, may be received by the numeral type-keys, even though the numeral type-bars do not engage the typewriter universal bar 18, since such impulse is transmitted through the special universal bar 49 and the linkage 34, 36, 37, 38, the driving arm 33, rock shaft 32, arm 31, and stem 30 to the numeral key 10.

It will be understood further that if there should be any impediment to the return motion of the pin-setting bar 36, the universal bar frame 18 of the typewriter will be impeded thereby in its return movement, and hence will act sluggishly, thus warning the operative, who, except for the connection between the pin-setting bar and the universal bar of the typewriter, would have no warning. If the impediment is so great as to arrest the pin-setting bar, the typewriter universal bar will also be arrested, and operation of the machine stopped. Hence, liability of an undiscovered error being made by the tardy return of the bar 36 is reduced or eliminated.

When it is desired to silence the adding mechanism, the usual non-add key 55 may be pressed rearwardly, its rod 56 operating a lever or arm 57, which is usually pivoted to the machine, and is provided with a short arm 58 which engages a cam 59 to depress a

cam roll 60 which usually serves the purpose of elevating or holding up to its working position the denomination-selecting dog 41. Hence, when said non-add key is pushed in, these dogs 41 are silenced, and hence none of the pin-carrying bars 40 are displaced, and the operations of the pin-setting linkages are idle. However, the pin-setting linkages all operate the special universal bar 49, and thereby the typewriter universal bar 18, so that typewriting proceeds the same as if the numeral type-bars had heels 17 to operate the universal bar 18.

The operation of the parts may be timed to secure the best results. The pin-setting bar 36 may begin to descend at the last portion of the down stroke of the numeral key, as is customary. The special universal bar 49 may be operated during the entire down stroke of the pin-setting bar. The typewriter universal bar 18 may operate during only the final portion of the down key stroke, or the type-bar printing stroke. Upon the return, the universal bars may therefore be returned to normal positions at the initial part of the up stroke of the key, together with the pin-setting bar 36, so that said bar 36 may be clear of the pins 39 on the pin-carrying bar, permitting early return of the latter to normal position by the spring 48. Moreover, the pin-setting bar will at the same time be clear of the next advancing pin-carrying bar 40, and this may be timed so that the pin-setting bar is not advanced by the carriage 16 until after the universal bar 49 has returned to normal position and cleared the pin-setting bar from the pins. To this end more or less clearance may be left between the arm 52 of the special universal bar frame and the typewriter operating link 53, as at Fig. 1, or the arm may be made short, or both expedients may be used.

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 combined typewriting and computing machine comprising a typewriter carriage, a feeding mechanism therefor, a universal bar mechanism to control said feeding mechanism, alphabet type-actions having means connected to operate said universal bar mechanism, numeral type-actions unprovided with means to operate said universal bar mechanism, a computing mechanism comprising rows of index pins or devices, denomination-selecting mechanism controlled by said carriage for displacing the index pins or devices row after row, devices individual to said numeral type-actions for setting the index pins or devices on the displaced rows, a special bar universally operable by said setting devices,

and a connection from said special universal bar to the typewriter universal bar mechanism to operate the latter.

2. In a combined typewriting and computing machine comprising a typewriter carriage, a feeding mechanism therefor, a universal bar mechanism to control said feeding mechanism, alphabet type-actions having means connected to operate said universal bar mechanism, numeral type-actions unprovided with means to operate said universal bar mechanism, a computing mechanism comprising rows of index pins or devices, denomination-selecting mechanism controlled by said carriage for displacing the index pins or devices row after row, devices individual to said numeral type-actions for setting the index pins or devices on the displaced rows, a special bar universally operable by said setting devices, a connection from said special universal bar to the typewriter universal bar mechanism to operate the latter, and means for silencing the computing mechanism at the operation of the numeral type-actions, said silencing means including a device for disabling a part of the denomination-selecting mechanism, so that said setting devices, at the operation of the numeral type-actions may operate said special universal bar.

3. In a combined typewriting and computing machine comprising a typewriter carriage, a feeding mechanism therefor, alphabet type-actions having means connected to operate said feeding mechanism, numeral type-actions, a computing mechanism comprising rows of index pins or devices, denomination-selecting mechanism controlled by said carriage for displacing the index pins or devices row after row, devices individual to said numeral type-actions for setting the index pins or devices on the displaced rows, a special bar universally operable by said setting devices, and means to enable said special universal bar to operate said carriage-feeding mechanism.

4. In a combined typewriting and computing machine comprising a typewriter carriage, a feeding mechanism therefor, alphabet type-actions having means connected to operate said feeding mechanism, numeral type-actions, a computing mechanism comprising rows of index pins or devices, denomination-selecting mechanism controlled by said carriage for displacing the index pins or devices row after row, devices individual to said numeral type-actions for setting the index pins or devices on the displaced rows, a special bar universally operable by said setting devices, means to enable said special universal bar to operate said carriage-feeding mechanism, and means for silencing the computing mechanism at the operation of the numeral type-actions, said silencing means including a device for

disabling a part of the denomination-selecting mechanism, so that said setting devices, at the operation of the numeral type-actions, may operate said special universal bar and
5 said feeding mechanism.

5. In a combined typewriting and computing machine comprising a typewriter carriage, a feeding mechanism therefor, a universal bar mechanism to control said
10 feeding mechanism, alphabet type-actions having means connected to operate said universal bar mechanism, numeral type-actions unprovided with means to operate said universal bar mechanism, a computing
15 mechanism comprising rows of index pins or devices, denomination-selecting mechanism controlled by said carriage for displacing the index pins or devices row after row, devices individual to said numeral
20 type-actions for setting the index pins or devices on the displaced rows, a special bar universally operable by said setting devices, a connection from said special universal bar to the typewriter universal bar mechanism
25 to operate the latter, and a returning spring for said universal bar mechanism, effective upon said special universal bar and any setting device by which the latter is actuated.

6. In a combined typewriting and computing machine comprising a typewriter carriage, a feeding mechanism therefor, a universal bar mechanism to control said
30 feeding mechanism, alphabet type-actions having means connected to operate said universal bar mechanism, numeral type-actions unprovided with means to operate said universal bar mechanism, a computing mechanism comprising rows of index pins or
35 devices, denomination-selecting mechanism controlled by said carriage for displacing the index pins or devices row after row, devices individual to said numeral type-actions for setting the index pins or devices on the
40 displaced rows, a special bar universally operable by said setting devices, and a connection from said special universal bar to the typewriter universal bar mechanism to operate the latter, said carriage-feeding
45 mechanism including means whereby at the movement of the carriage the power of the carriage-propelling force is transmitted through said feeding mechanism and the typewriter universal bar mechanism to the
50 special universal bar, to assist in returning promptly any setting device whereby said special universal bar is actuated.

7. In a combined typewriting and computing machine comprising a typewriter carriage, a feeding mechanism therefor, numeral type-actions, a computing mechanism including denominational set of index
60 pins or devices, denomination-selecting mechanism for said sets of index pins or devices, devices individual to said numeral type-actions for engaging the index pins or

devices to set the same, and means to enable said setting devices to operate the carriage-feeding mechanism.

8. In a combined typewriting and computing machine comprising a typewriter
70 carriage, a feeding mechanism therefor, numeral type-actions, a computing mechanism including index pins or devices, denomination-selecting mechanism for said index pins or devices, devices individual to said numeral type-actions for engaging the index
75 pins or devices to set the same, means to enable said setting devices to operate the carriage-feeding mechanism, and means for silencing the computing mechanism at the operation of the numeral type-actions, while
80 maintaining the connection from said numeral type-actions through said setting devices to said carriage-feeding mechanism.

9. In a combined typewriting and computing machine comprising a typewriter
85 carriage, a feeding mechanism therefor, a universal bar mechanism to control said feeding mechanism, alphabet type-keys having means connected to operate said universal bar mechanism, numeral type-actions unprovided with means to operate said universal bar mechanism, a computing mechanism including rows of index pins or
90 devices, denomination-selecting mechanism controlled by said carriage for displacing index pins or devices, devices individual to said numeral type-actions for setting the index pins or devices, and means to enable
95 said setting devices to operate the typewriter universal bar mechanism.

10. In a combined typewriting and computing machine comprising a typewriter carriage, a feeding mechanism therefor, a universal bar mechanism to control said
105 feeding mechanism, alphabet type-keys having means connected to operate said universal bar mechanism, numeral type-actions unprovided with means to operate said universal bar mechanism, a computing mechanism including rows of index pins or
110 devices, denomination-selecting mechanism controlled by said carriage for displacing index pins or devices, devices individual to said numeral type-actions for setting the index pins or devices, means to enable said setting
115 devices to operate the typewriter universal bar mechanism, and means for silencing the computing mechanism at the operation of the numeral type-actions, while maintaining operative connection between
120 said setting devices and said typewriter universal bar mechanism.

11. In a combined typewriting and computing machine, the combination with a
125 typewriter mechanism and an adding mechanism, said typewriter mechanism including alphabet and numeral keys, and said computing mechanism including digital indexing members individual to the numeral keys, 130

said digital members normally disconnected from said keys, of means to enable the typewriter mechanism to aid in returning said digital members to normal position after

5 actuation by said keys.

12. In a combined typewriting and computing machine, the combination with a typewriter mechanism including a carriage and an adding mechanism, said typewriter
10 mechanism also including alphabet and numeral keys, and letter-feeding mechanism for said carriage, and said computing mechanism including digital indexing members individual to the numeral keys, of means to
15 connect the digital members to the carriage-feeding mechanism to operate the latter, and to enable the carriage-feeding mechanism in its return movement to aid in returning the digital members to normal po-
20 sition, so that the carriage-feeding mechanism cannot complete its cycle of operations unless the active digital member is returned.

13. In a combined typewriting and computing machine, the combination with a
25 typewriting mechanism including alphabet and numeral type-actions, and type-writer escapement mechanism, of a computing mechanism operable by the numeral type-actions, and means whereby said typewriter
30 escapement mechanism is controlled by the numeral type-actions through the computing mechanism throughout the advance and return movements of said numeral type-actions.

35 14. In a combined typewriting and computing machine comprising a typewriter mechanism inclusive of alphabet and numeral keys and a carriage, and also comprising, a computing mechanism inclusive of a
40 denomination - selecting mechanism controlled by the carriage, of numeral-key-operated index-setting devices, and means to make the full operation of the typewriter mechanism depend upon the return of the
45 index-setting devices after actuation thereof.

15. In a combined typewriting and computing machine comprising a typewriter carriage, a feeding mechanism therefor, numeral type-actions, a computing mechanism including index devices, denomination-
50 selecting mechanism for said index devices, devices individual to said numeral type-actions for engaging the index devices to set the same, means to enable said setting
55 devices to operate the carriage-feeding mechanism, and means for silencing said denomination - selecting mechanism and thereby preventing setting of said index devices.

60 16. In a combined typewriting and computing machine, the combination with typewriting mechanism including a platen and alphabet and numeral type-actions for printing thereon, of means operable by said
65 alphabet type-actions for effecting a relative

traveling movement between said platen and said type-actions, computing mechanism operable by said numeral type-actions, and means operable by the numeral type-actions, through the computing mechanism, for effecting a relative traveling movement be-
70 tween the platen and the type-actions.

17. In a combined typewriting and computing machine, in combination, a traveling carriage, escapement mechanism therefor, keys including alphabet keys and numeral
75 keys, alphabet-key-actuated means for operating the escapement, numeral-key-actuated means for operating the escapement, and computing means, including devices adapted to be actuated by said numeral-key-actuated means, to index a number to be com-
80 puted.

18. In a combined typewriting and computing machine, in combination, a traveling carriage, alphabet and numeral keys, computing mechanism including denomination-
85 selecting mechanism controlled by the carriage, numeral-key-operated index-setting devices, and means to render the feeding movement of the carriage dependent upon the return of the index-setting devices after
90 actuation thereof.

19. In a combined typewriting and computing machine, in combination, a traveling carriage, numeral keys, computing mechanism including elements in which digits may be indexed in different denominations selected by said carriage, and a device for
95 actuating concomitantly all of said elements in which digits have been indexed, numeral-key-actuated setting devices, one for each key, to determine the digits to be indexed in said elements and means rendered effective upon a setting movement of
100 any one of said setting devices to prevent movement of said carriage until the actuated setting device is withdrawn from effective setting range.

20. In combination, typewriting mechanism including a carriage, letter-feeding means therefor and numeral keys, computing mechanism including digital indexing members individual to and operable by the
110 numeral keys, and means whereby said letter-feeding means will be actuable by any one of said digital indexing members, and the letter-feeding means will assist in returning the digital indexing members to
115 normal position.

21. In a combined typewriting and computing machine, in combination, a typewriter-carriage, an escapement mechanism therefor, keys including alphabet and numeral keys, computing mechanism including
125 denominational devices in which digits may be indexed, carriage-actuated means for selecting the denominational devices in which indexing is to be effected, numeral-key-actuated means for indexing digits in
130

said denominational devices when selected, and means for preventing movement of said carriage, and consequent actuation of the denomination-selecting means, until the numeral-key-actuated means has been restored to normal condition after indexing in any denomination.

22. In a combined typewriting and computing machine, in combination, a typewriter-carriage, means urging the same in letter-feeding direction, an escapement mechanism for said carriage, including a controlling device given an advance and a return movement, to effect letter-feeding, means yieldably urging said device to normal position and opposing an advance movement thereof, numeral keys, computing mechanism including indexing elements, each actuable by one of said numeral keys, and means whereby each of said elements, when actuated, will actuate said device, the construction and arrangement of the parts being such that both the carriage-urging means and the urging means for said controlling device will assist in returning an

actuated indexing element to normal position.

23. In a combined typewriting and computing machine, in combination, a traveling carriage, typewriter numeral keys, computing mechanism including denominational elements in which digits may be indexed, setting devices individual to said numeral keys and actuable thereby, each of said setting devices being adapted to index the corresponding digit on any of said denominational elements, carriage-controlled means for placing said denominational elements *seriatim* in position to enable indexing therein, and means to prevent a setting device, after operation thereof, from interfering with the return movement of a denominational element just set and the advance movement of the next denominational element.

BURNHAM C. STICKNEY.

Witnesses:

EDITH B. LIBBEY,
CATHERINE A. NEWELL.