

B. C. STICKNEY.
 COMBINED TYPE WRITING AND COMPUTING MACHINE.
 APPLICATION FILED MAY 13, 1912.

1,260,728.

Patented Mar. 26, 1918.
 4 SHEETS—SHEET 1.

FIG. 1.

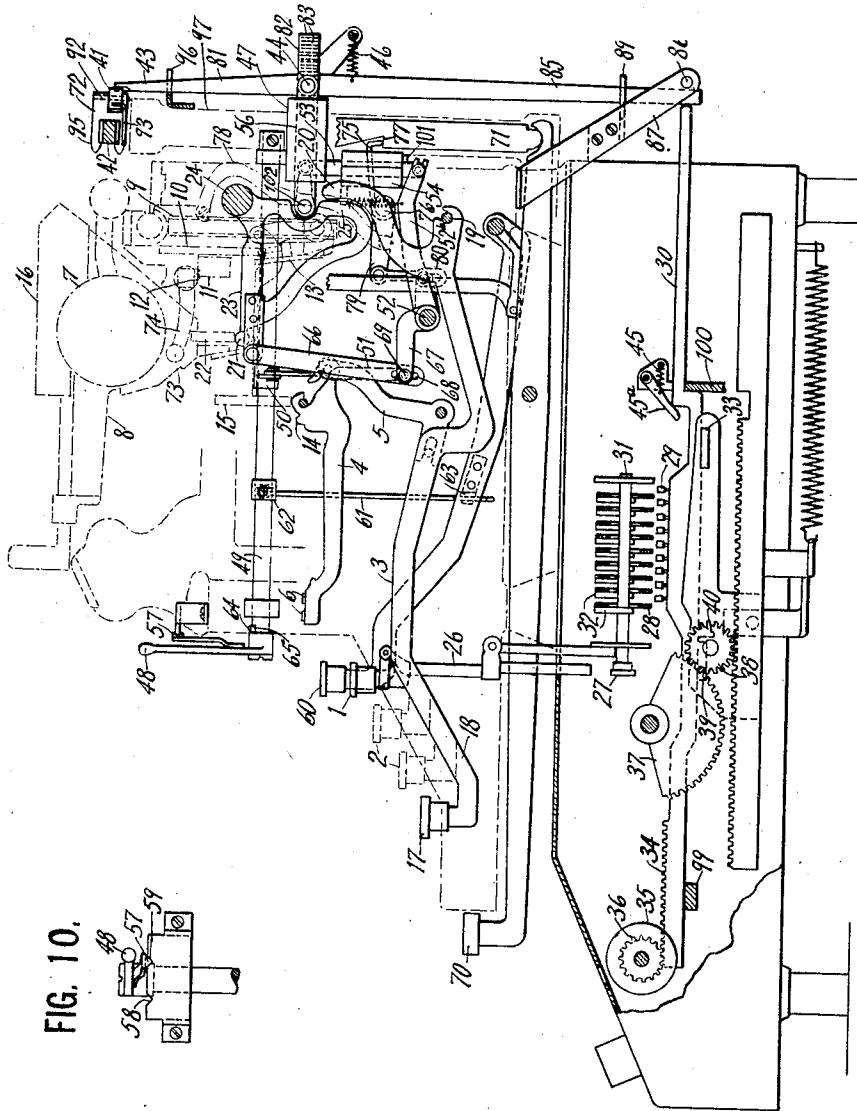
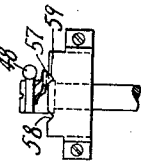


FIG. 10.



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4 SHEETS—SHEET 2.

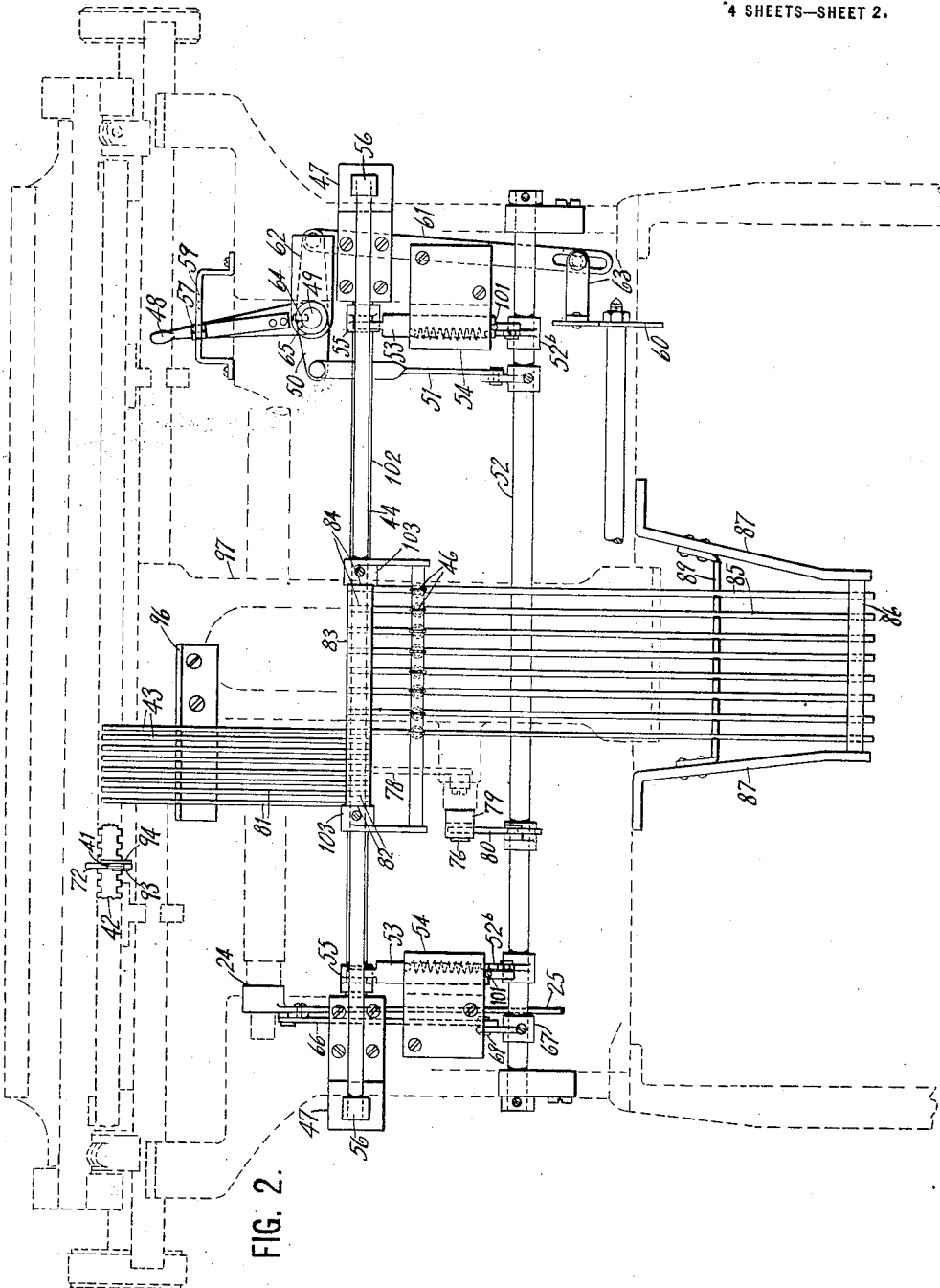


FIG. 2.

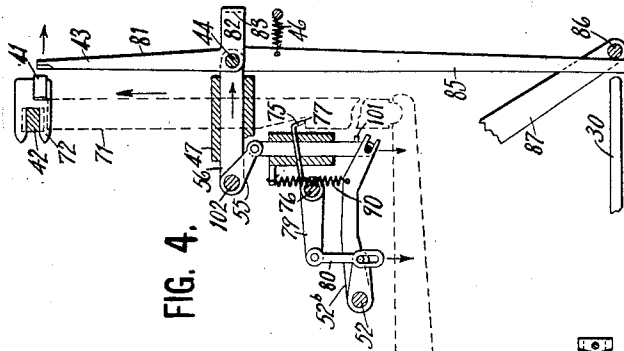
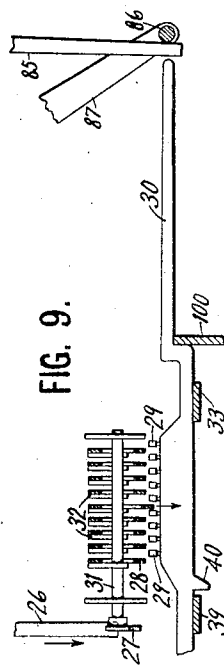
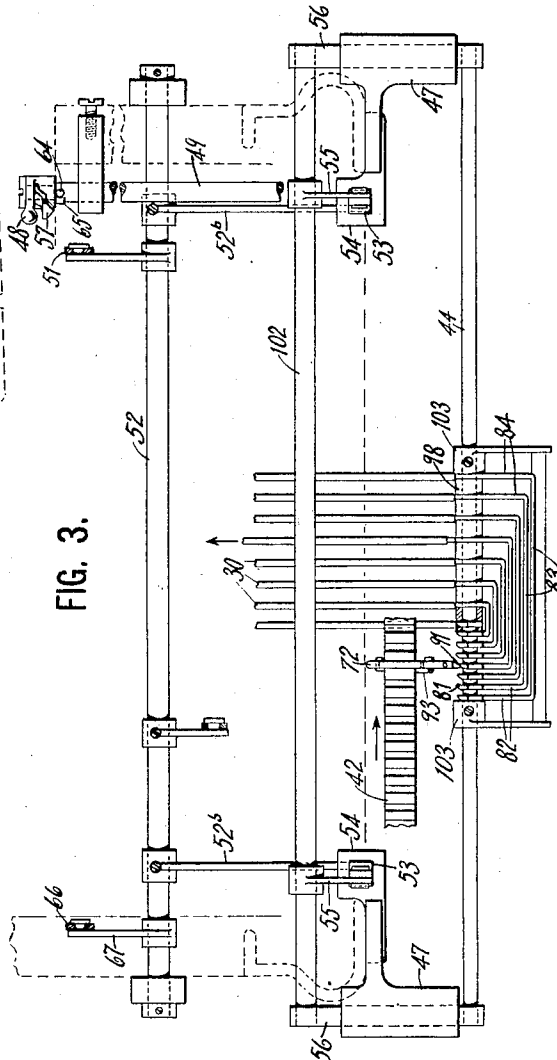
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 4 SHEETS—SHEET 3.



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4 SHEETS—SHEET 4.

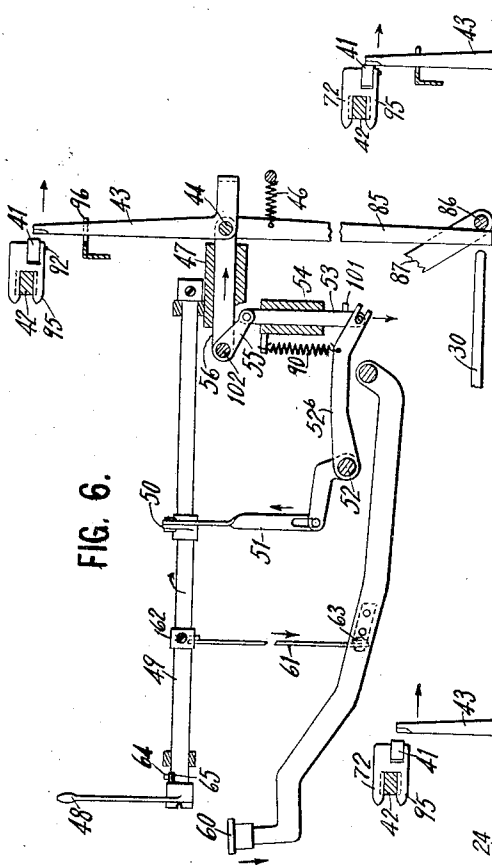


FIG. 6.

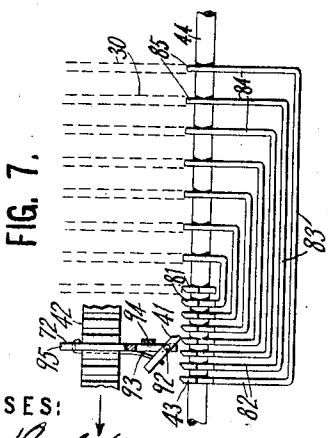


FIG. 7.

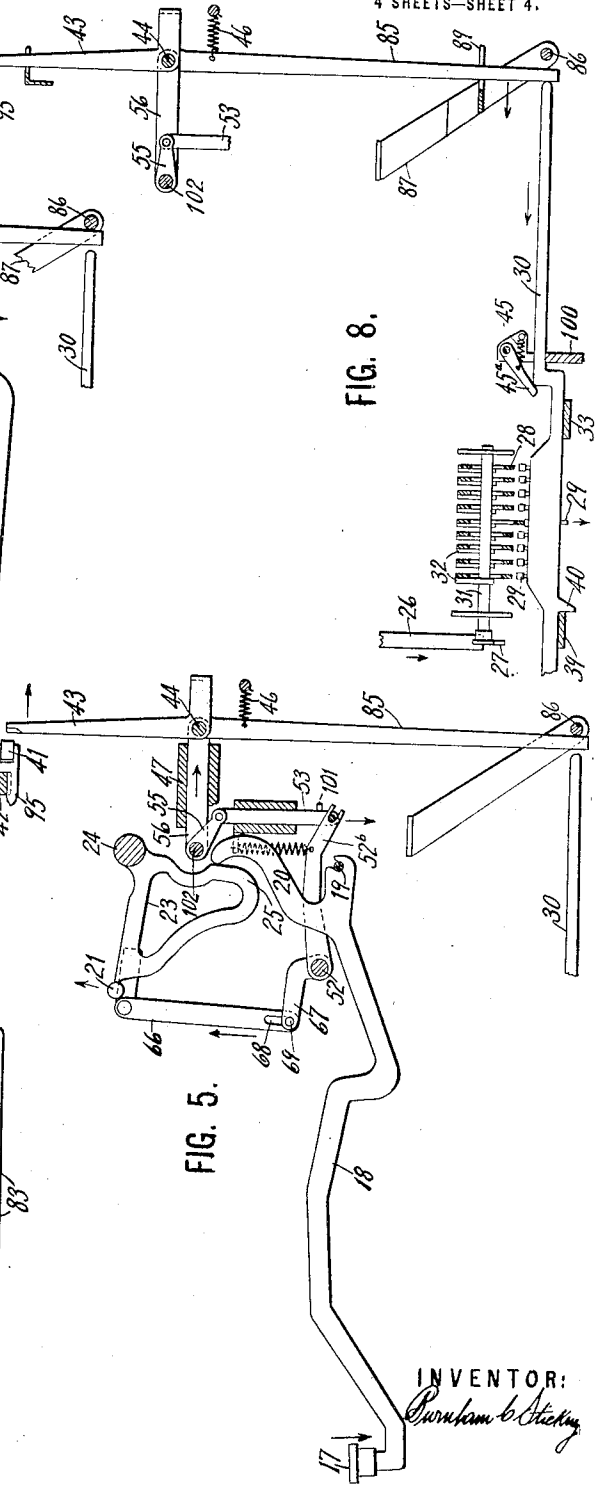


FIG. 8.

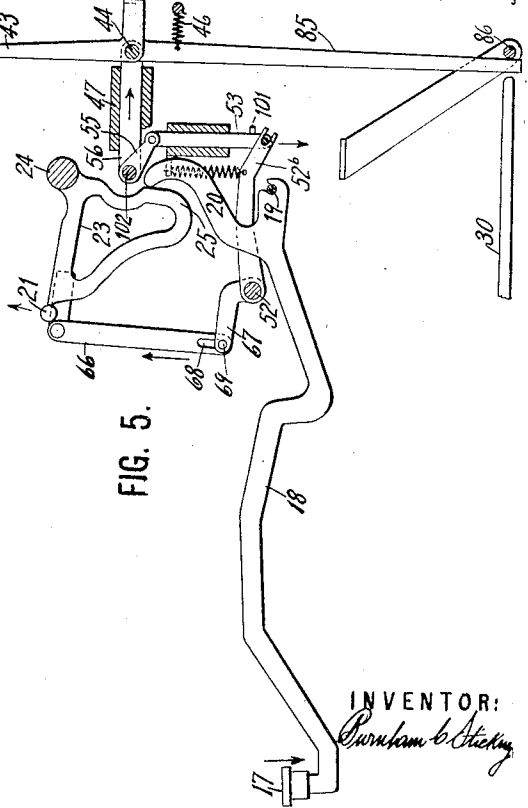


FIG. 5.

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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 DELAWARE.

COMBINED TYPE-WRITING AND COMPUTING MACHINE.

1,260,728.

Specification of Letters Patent. Patented Mar. 26, 1918.

Application filed May 13, 1912. Serial No. 696,838.

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 Type-Writing and Computing Machines, of which the following is a specification.

The present invention relates to a computing machine and is herein disclosed as applied to a combined typewriting and computing machine, embodying many of the features of the Underwood-Hanson type of said combined machines.

In machines of the aforesaid type, the numeral keys of the typewriter are caused to set pins on computation bars, which pins are later engaged by a general operator and caused to carry into computing wheels numerals represented by the pins set.

In said machines there is one computation bar for every numeral wheel used in a given computation; and these bars are selectively displaced by the typewriter carriage as it travels along in such manner, that when a numeral key is operated, only the pins on the computation bar so selected can be set. In the present invention for this purpose a selector bar is provided for every computation bar, and these selector bars are preferably unitary and may each extend from the path of a tappet on a typewriter carriage, and contact with its computation bar. These unitary selector bars are preferably all journaled on a movable shaft and by shifting said shaft, all the selector bars may be moved into and out of the path of the tappet on the typewriter carriage, that is by shifting said shaft the selector bars may be moved into either operative or inoperative position.

The computation bars may be slidable on stationary supports, so that said supports may take the jar of setting the pins on the bars. The pins are preferably so arranged on the computation bars that they are normally out of alinement with the setting members operated by the keys. When a selector bar moves the computation bar, it merely slides said computation bar slightly on its fixed supports, so that all its pins will aline with the setting members operated by the numeral keys. After the typewriting carriage has passed a selector bar, a spring automatically returns the computation bar so that its pins are out of alinement with the

setting members. When thus out of alinement it is impossible for a setting member to set a pin on the computation bar.

Means may be provided for silencing the connection between the typewriter carriage and said computation bars during any selected operation of the machine, such as during the operation of the case-shifting device, the back-spacing mechanism or a tabulating mechanism. This is preferably done by moving the selector bars into inoperative position as described above.

Other features and advantages will hereinafter appear.

In the accompanying drawings,

Figure 1 is a side view largely diagrammatic of a combined Underwood-Hanson machine, embodying my improvements.

Fig. 2 is a similar rear view of the same.

Fig. 3 is a plan view of certain of the parts.

Fig. 4 is a diagrammatic side view of the tabulating mechanism and its connections to the computing mechanism.

Fig. 5 is a similar view of the platen shift mechanism.

Fig. 6 is a similar view of the back space connections.

Fig. 7 is a plan view showing the operation of the denominational selecting members by the typewriter carriage.

Fig. 8 is a diagrammatic view showing the operating connection between said selecting member and a computation bar.

Fig. 9 is a diagrammatic view showing a computation bar in idle position.

Fig. 10 shows a detent holding a disconnecting lever for the computing mechanism.

Numeral keys 1 and alphabet keys 2 of the typewriter depress levers 3 to swing type bars 4 upwardly and rearwardly, by means of bell cranks 5, so that type 6 strikes against a platen 7 on a traveling carriage 8. Said carriage is drawn forward in its letter-feeding movement by means of a spring barrel 9, and is controlled in said movement by means of an escapement wheel 10, to which is connected a pinion 11 which works in a rack 12 fast on said carriage, and said escapement wheel is controlled by dogs 13 operated from heels 14 on the type bars through a universal member 15.

Said platen 7 is mounted in a platen frame 16 on said carriage and may be shifted with said frame so as to cause upper and

lower types 6 to strike alternately against said platen. This shifting is accomplished by means of a key 17 operating through a lever 18 pivoted at 19, which lever has an arm 20 extending upwardly. Said arm causes a rail 21 to swing upwardly and raise the platen frame 16 by a roller 22 on said frame traveling on said rail. Said rail swings on a bell crank 23 pivoted at 24 the opposite end of which 25 is arranged to be struck by arm 20 for the shift key lever aforesaid.

Depending from each numeral key 1 there is provided a stem 26, which is arranged to strike an arm 27 to rock a shaft 31 on which the arm is secured. Each of these shafts is also provided with a second arm 32 arranged to swing and spread a linkage 28, the lower reach of which is for the purpose of engaging and depressing any one of a series of pins 29 arranged in a cross line and mounted individually on separate computation bars 30. The pins are also arranged in longitudinal rows of nine, corresponding to the numeral keys from "1" to "9", on each computation bar 30. The linkages 28, of which there is one for each shaft 31 and for each numeral key 1, extend transversely of all the computation bars 30, so as to strike the corresponding pin on any bar 30 selected.

After a number has been written and the pins have been set up on the computation bars 30 as indicated, a general operator comprising a cross bar 33 is moved forward, so that said cross bar, as will be seen from Fig. 8, will strike the depressed pins 29 and carry forward the computation bars 30, so that racks 34 on their forward ends will rotate computing wheels 35 by means of gears 36 and register in said wheels the number written.

Said operator may be moved forward by means of a segment 37 driving an idle wheel 38 meshing with a rack on the general operator, and on its return stroke a bar 39, also forming part of said general operator, will strike shoulders 40 on the computation bars 30 and return said bars to their normal position.

As the typewriter carriage travels along in letter-feeding direction, it carries with it a tappet 41 on a rack bar 42 fast on said carriage, which tappet is arranged at each letter-space to move a selected computation bar 30 by striking a selector bar 43 extending downward to the base of the machine. Said selector bars may be pivoted on shaft 44, and when moved by tappet 41, each moves its computation bar 30 from the ineffective position seen in Figs. 1 and 9, to the effective position seen in Fig. 8, in which effective position each heretofore described linkage 28 is directly over its pin 29.

It will be observed that in the normal ineffective position of the computation bars 30,

the links 28 move idly between the pins so that no pin will be set on any computation bar unless it is momentarily moved by the tappet 41 to effective position. As the tappet 41 releases a selector bar 43, the computation bar 30 is drawn back to its normal ineffective position by means of a spring-operated arm 45^a, urged by spring 45 and the selector bar itself may likewise be moved to inoperative position by means of a spring 46. These springs, it will be seen, do not turn any heavy mechanism, and in fact, move the bars 30 only to the extent of a slight lost motion provided between them and the wheels 36 so that said springs 45 and 46 may both be light. The tappet 41, therefore, has very little work to do, and consequently the selection of the computation bars adds extremely little work to the spring barrel 9 which drives the carriage.

To move the selector bars 43 to inoperative position, the shaft 44 may be slidably supported, and whenever it is desired to disconnect the computing mechanism from the typewriting machine, a hand lever 48 at the front of the machine may swing said bars outwardly so that they no longer are in the path of tappet 41, by moving said shaft 44 rearwardly.

The connections between said lever 48 and shaft 44 include a shaft 49 (Fig. 6) on which is fast an arm 50, said arm 50 being connected by a depending link 51 with an arm fast on a rock shaft 52, the latter also having fixed to it an arm 52^b whose outer end is connected to a slide 53 which is movable vertically in bearing 54. Through a link 55 extending from said slide 53 to horizontal slide 56, said slide 56 is moved in bearing 47 so that shaft 44 carried on said slide 56 may swing the selector bars to operative or inoperative position. Said lever 48 may be fastened in either operative or inoperative position by means of a detent 57 (Fig. 10) arranged to rest in either notch 58 or 59.

A back-space key 60 is arranged in any ordinary manner to back-space the typewriter carriage, and in so doing it is arranged to move the selector bars 43 to inoperative position through a link 61 pivoted to an arm 62 on the shaft 49 above described. Said link 61 is slidably pinned to an arm 63 extending from the lever of said space-key 60 so that said shaft 49 may move selector bars 43 to inoperative position without moving said space-key 60.

In order that said back-space key 60 may be operated without moving lever 48, a lost motion connection is provided including engaging pins 64 and 65, the former of which is secured to the shaft 49, and the latter of which is secured to the hub of the lever 48. This enables the lever 48 to rock the shaft 49 to silence the selector bars 43, and yet leaving the lever 48 passive when the shaft

49 is rocked from any other source, such as the back-space key 60.

The platen shift rail 21 may be likewise connected to shaft 52 by means of a link 66 (Fig. 5) swinging an arm 67 on said shaft 52 to move the selector bars 43 to inoperative position whenever the platen is shifted to write upper case characters. Said link 66 comprises a slot 68 in which a pin 69 on said arm 67 may slide so that said shaft 52 may be swung to move the selector bars 43 to inoperative position irrespective of the platen-shift mechanism.

At the key-board of the typewriting machine tabular keys 70 may operate any desired form of tabulating mechanism, which may comprise plungers 71 cooperating with stops 72 on the rack 42. The operation of these plungers swings the selector bars to inoperative position as will now be described. In being operated said plungers 71 are arranged to release the typewriter carriage from the escapement device 10 by lifting rack 12 out of mesh with pinion 11, which rack is pivoted at 73 to swing on arms 74. This lifting is accomplished by means of a universal member 75 fast on shaft 76, so that it is swung to rock said shaft by shoulders 77 on said plungers 71; and in so swinging, shaft 76 draws down link 78 to lift said rack. The shaft 76 also swings down an arm 79 (Fig. 4), which is connected to rock the shaft 52, and thus swing the selector bars 43 to an ineffective position when tabulating. The connection from the arm 79 to the shaft 52 consists in a link 80 having a pin-and-slot lost-motion connection with an arm 200 secured to the rock shaft 52. The lost-motion connection enables the shaft 52 to be rocked from the other controlling connections without disturbing the tabulating mechanism.

Each selector bar 43 is formed as a unit comprising an upper end portion 81 (Fig. 2) which extends from the path of the tappet 41 to the shaft 44 where said bar is extended outwardly or rearwardly at 82 (Fig. 3), and then transversely at 83, then inwardly or forwardly at 84, and then downwardly at 85, each downwardly extending part controlling its computation bar 30 above described, and the parts 82 and 84 being pivoted on shaft 44.

The rearward throw of these downward extensions 85 may be limited by a bail 86 extending from arms 87, and the springs 46 normally draw said bars against said bail. A comb 89 may extend between the two arms 87 in order to hold said extensions 85 properly spaced. Said selector bars are normally drawn inward by means of a spring 90 which draws slide 53 upward. When in said inward position, as heretofore described, said selector bars are in the path of tappet 41, and as will be seen in Fig. 7, said tappet

and said bars are beveled so that when the carriage is at rest, the selector bar will be held outwardly at its upper end, as seen at 91 in Fig. 3, and inwardly at its lower end, thus holding the corresponding computation bar 30 in effective position, as seen in Fig. 8.

During the return of the carriage (Fig. 7), the tappet 41 may move idly over the ends of the selector bars 43 by swinging on its pivot 92 against the action of spring 93. During the opposite movement of the carriage, the tappet 41 moves said bars 43 as though it were solid, being held against swinging by means of abutment 94 formed as part of the main body 95 of said tappet. The body of said tappet, it will be observed, is constructed so as to fit in the rack bar 42 as though it were a special form of stop.

To insure smoothness of movement, the shaft 44 may be carried on identical slides 56 moving in bearings 47 on each end of the machine; and similarly the shaft 52 may carry identical arms 52^a at each end of the shaft operating duplicate slides 53.

The upper ends 81 of the selector bars 43 may be kept in alinement by a comb member 96 having function similar to the comb member 89. Said comb member may be screwed to the casing 97 on the tabulator mechanism. Bosses 98 (Fig. 3) may be provided on the shaft 44 between the selector bars 43, so as to properly preserve their spacing on said shaft.

The computation bars may slide on fixed members 99 and 100 which support their opposite ends, so that the load of supporting said bars, when a pin is set, is taken by said fixed members.

It will be observed that the two slides 56, the adjustable shaft 44 and the shaft 102 connecting said slides, to which the links 55 are attached, form a solid frame. The extent of movement of these parts under the pull of the spring 90, is accurately limited and determined, so that the point of pivotal connection of the links 55 with the slides 53 will lie on a dead center with the shafts 44 and 102, so as to prevent the tappet 41 from moving the shaft 44, instead of rocking a selector bar 43. Means for limiting this movement is shown in the form of a stop 101 carried by one or both of the slides 53, and engaging the guide 54 therefor. The selector bars 43 may be adjustably located on the shaft 44 and held in such adjusted position by means of collars 103 (Fig. 3) slidable on said shaft 44. The comb members 96 and 89 must be shifted to correspond with the position of the selector bars 43, and the totalizer must likewise be located correspondingly.

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, the combination with a carriage traveling in letter feeding direction, of computing wheels, a driving member for each computing wheel, a selector bar for each driving member extending from the carriage to its driving member, and a shiftable shaft on which said selector bars swing.

2. In a combined typewriting and computing machine, the combination with a carriage traveling in letter feeding direction, of computing wheels, a driving member for each computing wheel, a selector bar for each driving member extending from the carriage to its driving member, a shiftable shaft on which said selector bars swing, a tappet on the carriage of the typewriter for operating said selector bars, and means for shifting said shaft to swing said selector bars clear of said tappet.

3. In a combined typewriting and computing machine, the combination with a carriage traveling in letter feeding direction, of computing wheels, a driving member for each computing wheel, a selector bar for each driving member, and a shaft on which said selector bars swing, at least one selector bar comprising an arm operated by the carriage, an arm operating its driving member, said arms being on opposite sides of another selector bar, and a connection compelling said arms to move as a unit.

4. In a combined typewriting and computing machine, the combination with a key, and a carriage traveling in letter feeding direction, of computing wheels, a driving member for each computing wheel, a selector bar for each driving member, each selector bar extending from said carriage to its driving member, means for moving each selector bar by the typewriter carriage, a shaft on which said selector bars swing, means for shifting said shaft to carry said bars to a point where they will not be operated on by said carriage, and a connection to said key causing the operation of said key to so shift said shaft.

5. In a computing machine, the combination with numeral keys and computing wheels, of a selector bar for each computing wheel, a shaft on which said selector bars swing, a slide on which said shaft is mounted, a key separate from said numeral keys, a second slide operated by the last named key, and a pitman connected said slides.

6. In a combined typewriting and computing machine, the combination with a traveling carriage and computing wheels occupying at some time during the travel of the carriage the same vertical plane, of unitary selector bars extending from the horizontal plane of the carriage to the horizontal

plane of the computing wheels, and drivers for said computing wheels contacting each with a selector bar.

7. In a combined typewriting and computing machine, the combination with numeral keys and a pin bar, of a setting member operated by a numeral key, means for holding said pin bar so that the pin on it is normally out of alinement with the said setting member, and a unitary selector bar extending from the carriage of the typewriter to contact with said pin bar to move it from said carriage so that the pin will aline with its setting member.

8. In a combined typewriting and computing machine, the combination with computing wheels and a typewriter carriage traveling relatively to them, of a driver for each computing wheel, a unitary selector bar for operating each driver from the typewriter carriage extending from said carriage to the corresponding driver, a shaft on which said selector bars are journaled, and a finger-piece for moving said shaft to swing said selector bars to operative position.

9. In a combined typewriting and computing machine, the combination with computing wheels and a typewriter carriage traveling relatively to them, of a driver for each computing wheel, a selector bar for each driver extending from said carriage to the corresponding driver, a shaft on which said selector bars are journaled, a finger-piece for sliding said shaft to swing said selector bars to operative position, means for holding said finger-piece in whatever position it is set, a key, and a connection from said key for moving said selector bars to inoperative position when said key is operated whichever way said finger-piece is set.

10. In a combined typewriting and computing machine, the combination with computing wheels and a typewriter carriage traveling relatively to them, of a driver for each computing wheel, a selector bar for each driver extending from said carriage to the corresponding driver, a shaft on which said selector bars are journaled, a finger-piece for sliding said shaft to swing said selector bars to operative position, means for holding said finger-piece in whatever position it is set, a tabulating mechanism for the carriage, and means for moving said selector bars to inoperative position whenever said tabulating mechanism is operated.

11. In a combined typewriting and computing machine, the combination with a back-space key, a platen-shift key, and tabular keys, of computing wheels, a traveling carriage, a driver for each computing wheel, a selector bar for each driver extending from said carriage to its driver, a shaft on which said selector bars are journaled, a slide supporting said shaft, a universal shaft, a con-

nection from said slide to said universal shaft, and means for operating said universal shaft to move said selector bar shaft to move said selector bars to inoperative position whenever said back-space key, said
 5 platen-shift key, or one of said tabular keys is operated.

12. In a combined typewriting and computing machine, the combination with a
 10 typewriter carriage, of computing wheels relatively to which said carriage travels, a driver for each computing wheel, a tappet on the typewriter carriage, fixed supports on which said drivers may slide, and a selector bar for each driver extending from
 15 the typewriter carriage to its computation bar, so that it moves said computation bar slightly on its fixed supports.

13. The combination with a typewriting
 20 mechanism including a traveling carriage, of a computing mechanism, a series of selectors extending between said typewriting mechanism and said computing mechanism and forming means to effect denominational
 25 selection of the computing mechanism, said selectors being operative by said carriage during the travel thereof, and means for shifting said selectors bodily in a direction transverse to the direction of length there-
 30 of so as to control the same.

14. The combination with a typewriting
 mechanism, of a computing mechanism, a series of selectors extending between said
 35 typewriting mechanism and said computing mechanism so that the actions of the latter can be controlled from the former, a shaft for supporting said selectors, said selectors being individually movable on said shaft, and means for shifting said shaft bodily to
 40 move all of said selectors bodily and thus control their effectiveness, as a connection between said typewriting mechanism and said computing mechanism.

15. The combination with a typewriting
 45 mechanism including a traveling carriage, of a computing mechanism including a series of denomination or order members, and a series of levers for actuating said order members, there being one of said levers for
 50 each of said order members, said levers contacting with said order members to shift the same longitudinally and extending up to said carriage to be actuated thereby.

16. The combination with a typewriting
 55 mechanism including a carriage, of a computing mechanism including a series of order members shiftable longitudinally to control their effectiveness to determine the indexing of a computation, and a series of
 60 levers pivotally mounted intermediate their ends, extending to said carriage to be rocked thereby and contacting with said order members at the ends thereof so as to shift said order members in the direction of their
 65 length to determine the operativeness there-

of, said levers inverting their order of succession end for end at their pivots.

17. The combination with a typewriting
 mechanism including a traveling carriage,
 70 of a computing mechanism including a series of denomination or order members, a series of levers extending from said carriage to said order members enabling the latter to be actuated by the former as said levers are
 75 rocked individually, and a floating pivot for said levers enabling a bodily shift of said levers.

18. The combination with a typewriting
 mechanism including a traveling carriage,
 80 of a computing mechanism including a series of denomination or order members, a series of selectors extending from said carriage to said order members to enable the activity of the latter to be controlled by the
 85 former, means for shifting said selectors bodily back and forth in a direction transverse to the length thereof so as to control their effectiveness, and means for guiding
 90 said selectors in their back-and-forth movement and maintaining said selectors in their proper relative positions.

19. The combination with a typewriting
 mechanism including a traveling carriage,
 95 of a computing mechanism including a series of order members, a series of selectors extending from said carriage to said order members so as to actuate the latter, a tappet
 100 carried by said carriage for actuating said selectors individually, and means for shifting said selectors bodily and rearwardly clear of the path of travel of said tappet.

20. The combination with a typewriting
 mechanism including a traveling carriage
 105 and tabulating mechanism for determining the position of said carriage, of a computing mechanism including a series of denomination or order members, a series of selector levers extending from said carriage to said
 110 order members to enable the latter to be actuated by the former, a floating pivot for said levers, and means for shifting said pivot while tabulating to prevent the control of said order members by said carriage during a tabulating movement of said carriage.
 115

21. The combination with a typewriting
 mechanism including a traveling carriage
 120 and back-spacing mechanism for said carriage, of a computing mechanism including a series of denomination or order members, a series of selector levers extending from said order members to said carriage so that the former may be controlled by the latter,
 125 a floating pivot for said selector levers, and means actuated by said back-spacing mechanism for shifting said floating pivot to a point to bring said levers clear of said carriage during a back-spacing movement of said carriage.

22. The combination with a typewriting 130

mechanism including a shifting mechanism for determining the writing of upper and lower case characters and a traveling carriage, of a computing mechanism including
 5 a series of denomination or order members, a series of selector levers extending from said order members to said carriage so that the former may be controlled from the latter, a floating pivot for said selector levers,
 10 and means actuated by said case-shifting mechanism to move said floating pivot bodily when said case-shifting mechanism is actuated to write upper-case characters so as to prevent the control of said order mem-
 15 bers from said carriage during the writing of upper-case characters.

23. The combination with a typewriting mechanism including a traveling carriage, tabulating mechanism for said carriage, a
 20 case-shifting mechanism for determining the writing of upper and lower case characters and a back-spacing mechanism for said carriage, of a computing mechanism including denomination or order members, a series of
 25 selector levers extending from said denomination or order members to said carriage, so that the actions of the former may be controlled from the latter, a floating pivot for said selector levers to enable the control of
 30 the effectiveness thereof as a connection between said order members and said carriage, and connections from said floating pivot to said tabulating mechanism, said back-spacing mechanism and said case-shifting mechanism, so as to enable the control of the
 35 position of said pivot and thus of said levers with respect to said carriage, so as to determine the effectiveness of said levers to form a connection enabling the control of said denomi-
 40 nation or order members from said carriage.

24. The combination with a series of denomination or order members movable longitudinally, of a traveling carriage, a tappet
 45 carried by said carriage, and a series of levers contacting with said order members and extending to said tappet to be actuated thereby, said levers being pivoted intermediate their ends and said tappet actuating
 50 said levers individually to rock them rearwardly at their upper ends and forwardly at their lower ends so as to shift said order members longitudinally.

25. The combination with a series of denomination or order members, of a traveling carriage, a tappet carried by said carriage, a series of selectors extending from the individual order members at their bottoms to said carriage at their tops to be
 60 actuated by said tappet, a floating support for said selectors arranged to slide rearwardly and forwardly to move said selectors bodily to the rear of the path of travel of said tappet and into the path of travel of
 65 said tappet, and fulcrum means for limiting

the rearward movement of the bottoms of said selectors so as to increase the rearward movement of the tops of said selectors.

26. The combination with a computing mechanism, of a series of selectors for controlling the denominations of said computing mechanism, a traveling carriage arranged to operate said selectors, said selectors being adjustable as a unit to determine their effectiveness, a slide for adjusting said
 70 selectors, a slide for adjusting said first-mentioned slide, a link connecting said slides, and means for shifting said second-mentioned slide.

27. The combination with a computing mechanism, of a series of selectors for controlling the denominations of said computing mechanism, a traveling carriage arranged to operate said selectors, said selectors being adjustable as a unit to determine their effectiveness, a slide for adjusting said
 85 selectors, a slide for adjusting said first-mentioned slide, a link connecting said slides, tabulating mechanism for said carriage, and means to enable said tabulating mechanism when actuated, to shift said last-mentioned slide to determine the effectiveness of said
 90 selectors.

28. The combination with a computing mechanism, of a series of selectors for controlling the denominations of said computing mechanism, a traveling carriage arranged to operate said selectors, said selectors being adjustable as a unit to determine their effectiveness, a slide for adjusting said
 95 selectors, a slide for adjusting said first-mentioned slide, a link connecting said slides, tabulating mechanism for said carriage, means to enable said tabulating mechanism when actuated to shift said last-mentioned slide to determine the effectiveness of
 100 said selectors, and case-shift mechanism connected to operate said last-mentioned slide.

29. The combination with a computing mechanism, of a series of selectors for controlling the denominations of said computing mechanism, a traveling carriage arranged to operate said selectors, said selectors being adjustable as a unit to determine their effectiveness, a slide for adjusting said
 110 selectors, a slide for adjusting said first-mentioned slide, a link connecting said slides, tabulating mechanism for said carriage, means to enable said tabulating mechanism when actuated, to shift said last-mentioned slide to determine the effectiveness of said
 115 selectors, and case-shift mechanism connected to operate said last-mentioned slide, said tabulating mechanism and said case-shift mechanism having a lost motion connection with said last-mentioned slide, so as to enable the actuation of said slide by either said
 120 tabulating mechanism or said case-shift mechanism while the other remains unaffected.
 130

30. The combination with a computing mechanism, of a series of selectors controlling the denominational actions of said computing mechanism, said selectors being movable
5 as a unit between effective and ineffective positions, and shifting mechanism for moving said selectors as a unit, acting automatically to prevent accidental movement of said selectors to ineffective positions.

10 31. The combination with a computing mechanism, of selectors for controlling the denominational actions of said computing mechanism, means for operating said selectors individually, and adjusting means for
15 disabling said selectors as a unit, said disabling means having a dead center device to prevent accidental disabling movement of said selectors.

20 32. The combination with a computing mechanism, of a series of selectors for controlling the denominational actions of said computing mechanism, means for actuating said selectors individually, a fulcrum for said
25 selectors, and shifting means for adjusting said fulcrum, so as to render said selectors as a whole effective or ineffective, said shifting means having a dead center device to prevent the accidental movement of said
30 fulcrum when not positively manipulated by said shifting means.

33. The combination with a computing mechanism, of a series of selectors for controlling the denominational actions of said computing mechanism, means for actuating
35 said selectors individually, a fulcrum for said selectors, a slide for shifting said fulcrum between effective and ineffective positions of said selectors, a link pivotally connected to said slide to actuate the same, and
40 a second slide pivotally connected to said link to actuate said link, said second-mentioned slide being so positioned when said selectors and said fulcrum are in a position corresponding to an effective condition of
45 said selectors, that the point of pivotal connection with said link will lie in a line passing through the center of said fulcrum and the center of the pivotal connection of said slide with said first-mentioned line.

50 34. In a combined typewriting and computing machine, the combination with numeral keys, computing wheels and a traveling carriage, of a tappet settable on said carriage, selector bars adapted to cooperate
55 with said tappet, a shiftable frame in which said selector bars are mounted, and means for moving said selector bars by shifting said frame, so that said tappet is ineffective thereon.

60 35. In a combined typewriting and computing machine, the combination with numeral keys, computing wheels and a traveling carriage, of a tappet settable on said carriage, selector bars movable by said tap-
65 pet, a sliding horizontally disposed frame in

which said selector bars are pivoted, and means for moving said sliding frame forwardly and backwardly in a horizontal plane to carry said selector bars into and out of the path of said tappet.

70 36. In a combined typewriting and computing machine, the combination with a traveling carriage, of an array of stops for arresting said carriage, keys controlling said stops, a universal bar moved by the operation
75 of any stop, an escapement for said carriage, means for releasing said carriage from said escapement by said universal bar, a denomination mechanism being included in the computing mechanism, means on the
80 carriage for selectively operating said denomination mechanism, and an extension of said universal bar arranged to swing said denomination mechanism clear of said carriage means.

85 37. In a combined typewriting and computing machine, the combination with numeral keys and computing wheels, of a rack bar for each computing wheel, a carriage for said typewriter, a selector bar for each rack
90 bar, a tappet on said typewriter carriage for moving said selector bars *seriatim* to move their rack bars to positions in which they are subject to the action of the numeral keys, a frame in which said selector bars are piv-
95 otally mounted, and means for shifting said frame to carry said selector bars clear of said tappet.

38. In a combined typewriting and computing machine, the combination with a
100 traveling carriage and a selecting device forming part of the computing mechanism, of an escapement for said traveling carriage, tabulating keys for positioning said carriage, and a single universal bar operated by
105 said tabulating keys for concurrently releasing said carriage from said escapement and moving said selecting device bodily as a unit to an ineffective position.

39. In a computing machine, the combination with numeral keys, computing wheels
110 and a traveling carriage, of a denomination selector to cooperate with said carriage, denomination members operable by said selector, a shaft on which said denomination
115 members are pivoted, and means for moving said shaft to carry said denomination members to ineffective position.

40. The combination, with a typewriting mechanism including a traveling carriage;
120 of a computing mechanism including a series of denomination or order members; a series of selector members for actuating said order members; a floating pivot whereon said selector members are mounted; car-
125 riage-carried means for actuating said selector members; and a manually-operable device connected to shift said pivot bodily, to concomitantly move all of said selector members bodily into or out of effective posi- 130

tion with relation to said carriage-carried means.

41. The combination, with a typewriting mechanism including a traveling carriage and numeral keys; of a computing mechanism including a series of denomination or order members; a series of selector members for actuating said order members; a floating pivot whereon said selector members are mounted; carriage-carried means for actuating said selector members; and a key separate from said numeral keys connected to shift said pivot bodily, to concomitantly move all of said selector members bodily into or out of effective position with relation to said carriage-carried means.

42. The combination, with a typewriting

mechanism including a traveling carriage; of a computing mechanism including a series of denomination or order members; a series of selector members extending from said carriage to said order members, to enable the former to actuate the latter; means for shifting all of said selector members as a unit in a direction transverse to their length, to silence them; and a manually-operable device connected to actuate said silencing means.

BURNHAM C. STICKNEY.

Witnesses:

F. E. ALEXANDER,
GEORGE E. MEWING,
H. WHITING.

Correction in Letters Patent No. 1,260,728.

It is hereby certified that the State of incorporation of the assignee in Letters Patent No. 1,260,728, granted March 26, 1918, upon the application of Burnham C. Stickney, of Elizabeth, New Jersey, for an improvement in "Combined Type-Writing and Computing Machines," was erroneously given as "Delaware," whereas said State should have been given as *New York*, as shown by the records of assignments in this office; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 23d day of April, A. D., 1918.

[SEAL.]

F. W. H. CLAY,
Acting Commissioner of Patents.

Cl. 235-60.