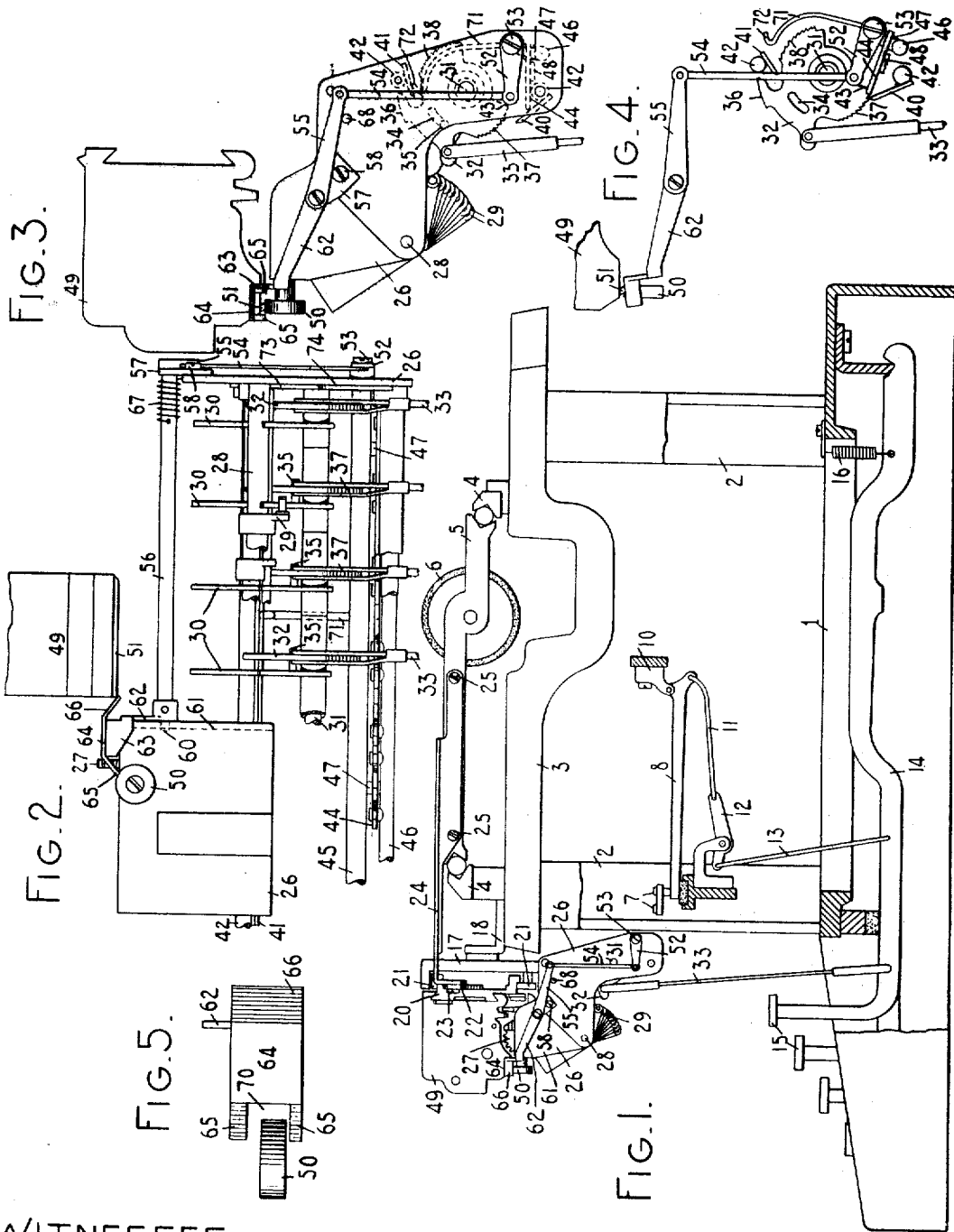


H. H. STEELE.
 COMBINED TYPE WRITING AND COMPUTING MACHINE.
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Patented Apr. 16, 1912.



WITNESSES:

E. M. Wells.

R. H. H. H. H.

INVENTOR.

Herbert H. Steele

By Jacob Steele

HIS ATTORNEY

UNITED STATES PATENT OFFICE.

HERBERT H. STEELE, OF MARCELLUS, NEW YORK, ASSIGNOR TO THE MONARCH TYPEWRITER COMPANY, OF SYRACUSE, NEW YORK, A CORPORATION OF NEW YORK.

COMBINED TYPE-WRITING AND COMPUTING MACHINE.

1,023,687.

Specification of Letters Patent.

Patented Apr. 16, 1912.

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To all whom it may concern:

Be it known that I, HERBERT H. STEELE, citizen of the United States, and resident of Marcellus, in the county of Onondaga and State of New York, have invented certain new and useful Improvements in Combined Type-Writing and Computing Machines, of which the following is a specification.

My invention relates partly to computing machines and also to combined typewriting and computing machines.

The principal object of my invention is to prevent the computing mechanism from placing an unnecessary load on the keys and from interfering with the rapidity of the operation of the keys, especially the numeral keys, when said keys are used for other purposes than computing, as when writing outside of the computing column or zone.

Various devices have been employed in the past in combined typewriting and computing machines to disconnect the computing mechanism from the numeral keys when writing numbers that were not intended to be registered.

My invention contemplates, not disconnecting the computing mechanism, but throwing out of operation those parts of said mechanism that most hamper the operation of the keys. The parts of the computing mechanism that most retard the action of the numeral keys are certain key-controlling devices known as key arrester and full-stroke devices. When these parts are in operation the key cannot return to normal position until it has made a complete movement of depression and cannot start on a second depression until it has completely returned to normal position. Moreover, a second key cannot start down until the preceding key has entirely returned to normal position. These facts necessitate a slower operation of the keys than a skilful typewriter operator is capable of. I have therefore provided means, in a combined typewriting and computing machine, for maintaining the key arrester and the full-stroke devices out of operation when the carriage is not in an adding zone, and for throwing these devices into operation when the carriage is in an adding zone.

To the above and other ends, my inven-

tion consists in certain features of construction and combinations and arrangements of parts, all of which will be fully set forth herein and particularly pointed out in the claims.

One embodiment of my invention is illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation, on a reduced scale and partly in section, of a Remington-Wahl typewriting and computing machine, with parts of the machine omitted or only diagrammatically represented. Fig. 2 is a fragmentary front elevation of a portion of the same. Fig. 3 is a side elevation of a portion of the computing mechanism, a certain shoe being shown in section. Fig. 4 is a fragmentary side elevation of some of the parts shown in Fig. 3, the framework being omitted and the mechanism being in a different position. Fig. 5 is a fragmentary top view of certain of my devices. Figs. 2 to 4 inclusive are, in the pen drawings, about natural size, and Fig. 5 is on an enlarged scale.

The machine shown in the drawings, except for modifications in which my invention consists, is a Wahl adding machine mounted as an attachment on a Remington No. 11 typewriter. The frame of said typewriter comprises a base 1, corner posts 2 and a top plate 3. On said top plate are mounted stationary rails 4 of a paper carriage 5, said carriage having a platen 6 mounted therein. Said carriage and platen are here conventionally represented, the platen having a shaft journaled in the carriage 5. In the actual machine the carriage includes a number of parts not here shown. The printing instrumentalities consist of types 7 mounted on front-strike type bars 8 which are supported at 10 on a vertical segment. Said type bars are operated by horizontal links 11, sub-levers 12, vertical links 13 and printing key levers 14, the latter having printing keys 15 on their forward ends and being provided with restoring springs 16. The carriage 5 is fed along the rails 4 by means of the usual spring drum and escapement mechanism, not shown.

The Wahl adding attachment comprises a stationary frame piece 17 which is mounted upon the front part of the typewriter frame,

being secured to the top plate 3 by means of brackets 18. The Wahl machine also includes a carriage bar 20 mounted parallel with the line of travel of the typewriter carriage and in front of said carriage and supported at the middle of the machine by means of certain rollers 21 mounted on the frame 17 and engaging the carriage bar 20. Said carriage bar is supported and controlled at its ends by means of bracket extensions 22 of said carriage, which extensions are connected by pin and slot connections 23 with brackets 24 secured by screws 25 to the carriage 5 and projecting therefrom toward the front of the machine. The Wahl machine also comprises an actuator 26 having a master wheel 27 which is operated from the numeral keys 15 by means including a rock shaft 28 having arms 29 projecting therefrom in spiral arrangement and adapted to be engaged by certain cams 30, which cams are pivoted on a rod 31. Each of the said cams is mounted by the side of a lever 32 which is connected by a link 33 with one of the numeral key levers 15. Each lever 32 has a segmental slot 34 therein and a pin 35 projects into said slot from the adjacent cam 30, whereby the lever 32, when operated by a depression of the corresponding numeral key, operates the cam but with lost motion between the lever and the cam. The devices 32, which I have called levers, consist of plates or disks having the outline best shown in Fig. 4, and comprising a concentric part 36 for operating a universal bar, which universal bar is not shown herein, and also two concentric parts 37 and 38 with oppositely disposed ratchet teeth for cooperation respectively with full-stroke pawls 40 and 41, said pawls consisting of strips of metal extending substantially the length of the actuator and secured to rods or rock shafts 42. These pawls are controlled by the universal bar in such a fashion that, upon the down stroke of any numeral key, the pawl 41 engages the ratchet 38 to prevent upward motion of the key until said key shall have completed its down stroke, and that upon the upstroke of said key the pawl 41 is moved out of engagement and the pawl 40 is moved into engagement with the ratchet 37 to compel a completion of the upstroke of the key. At the lower end of the ratchet 37, the member 32 is formed with a shoulder 43 for cooperation with a key arrester consisting of a series of dogs 44 pivoted between two transverse bars 45 and 46, Fig. 2. These bars are secured together by posts 47 and in the Wahl machine they are both fixed in the end plates of the actuator. The two dogs 44 at the extreme ends of the system of dogs are connected together by a long link or bar 48 in such a way as to leave just enough looseness in the series of dogs to allow of the opera-

tion of one of the levers 32, the construction being such that when one of said levers is between two of the dogs there is not room to permit of another lever being operated. The Wahl machine also comprises one or more adding heads 49, which adding heads are mounted on the bar 20 in such a manner that any one of said heads can be adjusted to any desired position along the bar, its position determining the location of an adding column or zone on the paper in the typewriter. Only one adding head is shown in the present instance. These adding heads at their lower front part ride on a wheel or roller 50 mounted on the front of the actuator 26 to assist in guiding the adding head accurately across the master wheel, each adding head being provided with a rail or trackway 51 for cooperation with said roller 50.

All of the parts above described are well known in the art and I have not deemed it necessary to illustrate them nor to describe them in minute detail.

The mounting of the bars 45, 46 has been modified in the present instance for the purposes of my invention. As was said above, these two bars are secured together at intervals by posts 47 so that the two bars and the key arrester dogs constitute a unitary device. I have omitted the direct connection of the bar 46 with the frame-work and have pivoted the bar 45 in the end plates of the actuator so that this unitary key arrester frame is pivoted to turn about the axis of said bar 45. Said bar is prolonged through the right-hand frame plate, as shown in Fig. 2, where it has an arm 52 rigidly secured thereon by means of a screw 53. This frame is adapted to stand in the position shown in Fig. 4, which is the operative position, and in which position the dogs 44 are operative to prevent the action of more than one of the levers 32 at a time. Said frame, however, normally stands in the position shown in Fig. 3, where the dogs 44 are depressed so as to be inoperative on the levers 32. The swinging of this frame is accomplished by means which includes a link 54 connected at its lower end with the arm 52 and at its upper end with an arm 55 projecting toward the rear from a rock shaft 56, which at its right-hand end is journaled in a bracket 57 secured to the actuator frame by a screw 58. The left-hand end of the shaft 56 is journaled at 60 in a plate 61 constituting part of a forwardly projecting section or portion of the actuator, in which portion the master wheel and associated devices are mounted. Near its left-hand end the shaft 56 has an arm 62 projecting therefrom toward the front of the machine and bent off toward the left to form an offset section 63, from which is bent off a horizontal shoe 64 having an incline

65 at its left-hand end and a second incline 66 at its right-hand end. This shoe stands in position to be cammed down by the adding head in a manner which will be understood by reference to Figs. 2 and 4, when said adding head is in the adding column. When the shoe 64 is thus cammed down the arm 55 is moved upward, raising the arm 52 and the key arrester frame to the operative position shown in Fig. 4. When the adding head passes off of the shoe 64 the parts are restored to the position shown in Fig. 3 by means of a restoring spring 67 coiled about the shaft 56 and connected at one end to said shaft and at the other end to the stationary framework. The motion of the parts under the impulse of this spring is limited by a stop pin 68, Fig. 3, arranged to arrest the arm 55.

It is desirable that the shoe on the arm 62 occupy a position nearly in front of the master wheel 27 and in this position the incline 65 of said shoe is so located that it would be arrested by the roller 50. For this reason I have formed said incline 65 with a slot 70, as shown in Fig. 5, said slot being in such position that when the shoe is depressed the roller is received within the slot. The inclines 65 are depressed by the right-hand side plate of the adding head until the bar 51 reaches the incline, when said bar rides up on the flat part of the shoe 64. The right-hand end of the bar may be beveled off as shown in Fig. 2 if necessary or desired. In Fig. 3 the shoe 64 is shown in section to disclose other parts to the left of it.

I prefer to move the full-stroke pawls 40 and 41 out of engagement with the ratchets 37 and 38 when the key arrester is moved to its inoperative position shown in Fig. 3. To this end an arm 71 is mounted on the key arrester frame and extends upward and forward, as shown in Fig. 4, said arm at its upper end being bent to form a cam 72. This arm is so arranged that when the parts move to the position shown in Fig. 3, said arm engages the pawl bar 41 and moves it to inoperative position, as shown in Fig. 3. This bar has on it an arm 73, Fig. 2, which arm is adapted to cooperate with an arm 74 on the pawl 40 so that when the pawl 41 is moved to the Fig. 3 position, these arms would cause the pawl 40 to be moved to its inoperative position also. However, the dogs 44 themselves are adapted to press against the upper and rear surface of the pawl 40 and depress said pawl to the position shown in Fig. 3. It will thus be seen that means are provided for rendering the full-stroke devices inoperative at the same time that the key arrester is thrown out of action. When the key arrester is moved up to the position shown in Fig. 4, the pawls 40 and 41 are restored to the con-

trol of the universal bar and of the springs which control these parts in the Wahl machine, as heretofore constructed.

It will be seen that I have provided means whereby, when the typewriter and computer carriages are not in an adding zone, the key arrester and full-stroke devices are rendered inoperative, so that the numeral keys are no longer burdened with the labor of operating them and so that said keys are no longer limited in their speed of operation by these devices; but when the carriages are moved into an adding zone, the parts referred to are restored to operative position and condition and perform their functions as usual.

Although I have here shown my invention in its adaptation to a Wahl computing machine in combination with a Remington typewriter, it will of course be understood that the invention is capable of adaptation to other styles of computing machines and typewriting machines, and that various changes can be made in the details of construction and arrangement without departing from my invention.

What I claim as new and desire to secure by Letters Patent, is:—

1. In a computing machine, the combination of keys, key actuated parts, a key arrester for preventing simultaneous operation of two keys, and means for rendering said key arrester operative and inoperative.

2. In a computing machine, the combination of keys, key actuated parts, a key arrester for preventing simultaneous operation of two keys, and means for moving said key arrester to an operative and to an inoperative position.

3. In a computing machine, the combination of keys, key actuated parts, a key arrester comprising a series of dogs for preventing simultaneous operation of two keys and a movable support for said dogs, and means for moving said support to bring said dogs into and out of operative position.

4. In a computing machine, the combination with keys and key actuated parts, of a key arrester movable as an entirety into and out of operative position.

5. In a computing machine, the combination of a series of keys, a series of levers operated by said keys, a series of key arrester dogs for cooperation with said levers, and a pivoted support on which said dogs are mounted, said support when moved about its pivot moving said dogs into and out of position to cooperate with said levers.

6. In a combined typewriting and computing machine, the combination of printing instrumentalities, a carriage, and printing keys for writing words and numbers, printing mechanism for registering numbers written at a predetermined part of the line of writing, key arrester mechanism, and

means for automatically rendering said key arrester mechanism operative when the carriage is in position for registering numbers and inoperative when the carriage is in other positions.

7. In a combined typewriting and computing machine, the combination of printing instrumentalities, a carriage, and printing keys for writing words and numbers, printing mechanism for registering numbers written at a predetermined part of the line of writing, key arrester mechanism, and means for automatically moving said key arrester mechanism to an operative position when the carriage is in position for registering numbers and to an inoperative position when the carriage is in other positions.

8. In a combined typewriting and computing machine, the combination with the printing keys, types and carriage of a typewriting mechanism, and computing mechanism for automatically registering numbers written by said typewriting mechanism, said computing mechanism including a key arrester, of means controlled by said key arrester for throwing said key arrester into and out of operation.

9. In a combined typewriting and computing machine, the combination of means including printing keys, types and a carriage for writing words and numbers, and means for registering numbers written, said means including an adding head adjustable with relation to the carriage travel, key arrester mechanism, and means controlled by said adding head for throwing said key arrester mechanism into and out of operation.

10. In a combined typewriting and computing machine, the combination of means for writing words and numbers, said means including printing keys, types and a carriage, means for registering written numbers, said means including a part adjustable with relation to the travel of said carriage, key arrester mechanism, and means controlled by said adjustable part for throwing said key arrester mechanism into and out of operative position.

11. In a combined typewriting and computing machine, the combination of typewriting mechanism including printing keys, types and a carriage, computing mechanism including an adjustable adding head, an actuator and key arrester mechanism, and means for moving said key arrester mechanism into and out of operative position, said means including a device arranged to be moved to an operated position by said adding head and maintained in such position while said carriage is passing through an adding zone.

12. In a computing machine, the combination of keys, key arrester mechanism, full-stroke mechanism for said keys, and means for throwing said key arrester mechanism

and said full-stroke mechanism simultaneously into and out of operation.

13. In a computing machine, the combination of keys, key actuated parts, a key arrester for coöperation with said key actuated parts, full-stroke mechanism for said key actuated parts, means for moving said key arrester mechanism into and out of operative position, and means operated by the first recited means for throwing said full-stroke mechanism into and out of operation.

14. In a computing machine, the combination of keys, key arrester mechanism, full-stroke mechanism including a full-stroke pawl and a coöperating ratchet, means for throwing said key arrester mechanism into and out of operation, and a device for holding said pawl away from said ratchet when said key arrester mechanism is out of operation.

15. In a computing machine, the combination of a series of keys, a key arrester including a frame that is movable into and out of operative position, a full-stroke device including a ratchet and a coöperating pawl, and means on said frame for holding said pawl away from said ratchet when said frame is in its inoperative position.

16. In a computing and writing machine, the combination of numeral keys, printing instrumentalities, computing mechanism, means whereby said keys can operate said computing mechanism, means whereby said keys can operate said printing instrumentalities both in conjunction with and independently of said computing mechanism, full stroke mechanism for said keys, and means for rendering said full stroke mechanism operative and inoperative.

17. In a computing and writing machine, the combination of numeral keys; printing instrumentalities; computing mechanism; means whereby said keys can operate said computing mechanism; means whereby said keys can operate said printing instrumentalities both in conjunction with and independently of said computing mechanism; full stroke mechanism for said keys, said full stroke mechanism comprising pawl and ratchet devices; and means for throwing said full stroke mechanism out of operation, said means including means for holding a pawl away from its ratchet.

18. In a combined typewriting and computing machine, the combination of printing keys, types, a carriage, means for registering numbers written by said types, full-stroke mechanism for said keys, and means controlled by said carriage for throwing said full-stroke mechanism into and out of operation.

19. In a combined typewriting and computing machine, the combination of printing keys, types, a carriage, computing mechanism

nism for registering numbers written by said types and keys, said mechanism including a part adjustable with relation to the travel of said carriage to determine the location of an adding zone, full-stroke mechanism for said keys, and means controlled by said part for throwing said full-stroke mechanism into and out of operation.

20. In a combined typewriting and computing machine, the combination of printing keys, types, a carriage, means for registering numbers written by said types and keys, said registering means including an adding head adjustable with relation to the travel of said carriage, and means controlled by said adding head for throwing said full-stroke mechanism into and out of operation.

21. In a combined typewriting and computing machine, the combination of printing keys, types, a carriage, a computer actuator, an adjustable adding head, a rocking arm having a shoe thereon arranged to be cammed to an operated position by said adding head during the travel of said carriage, and key-controlling devices thrown into and out of operation by said shoe.

22. In a combined typewriting and computing machine, the combination of printing

keys, types, a carriage, an adding head connected with said carriage and adjustable parallel with the line of carriage travel, an actuator connected with the numeral keys, key-controlling devices in said actuator, a rock shaft mounted on said actuator and having a shoe arranged to be cammed aside by said adding head during the travel of said carriage, and means whereby said rock shaft moves said key-controlling devices into and out of operation.

23. In a combined typewriting and computing machine, the combination of printing keys, types, a carriage, an adding head arranged to travel in unison with said carriage and having a rail thereon, a shoe arranged to be cammed aside by said rail during the traverse of said carriage, and key-controlling devices thrown into and out of operation by said shoe.

Signed at Syracuse, in the county of Onondaga, and State of New York, this 13th day of December, A. D. 1911.

HERBERT H. STEELE.

Witnesses:

WILLARD C. HAY,
BERNICE E. FOX.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."