

No. 860,299.

PATENTED JULY 16, 1907.

W. W. HOPKINS.

CARRIAGE STOP FOR TYPE WRITING MACHINES.

APPLICATION FILED DEC. 4, 1906

3 SHEETS—SHEET 1.

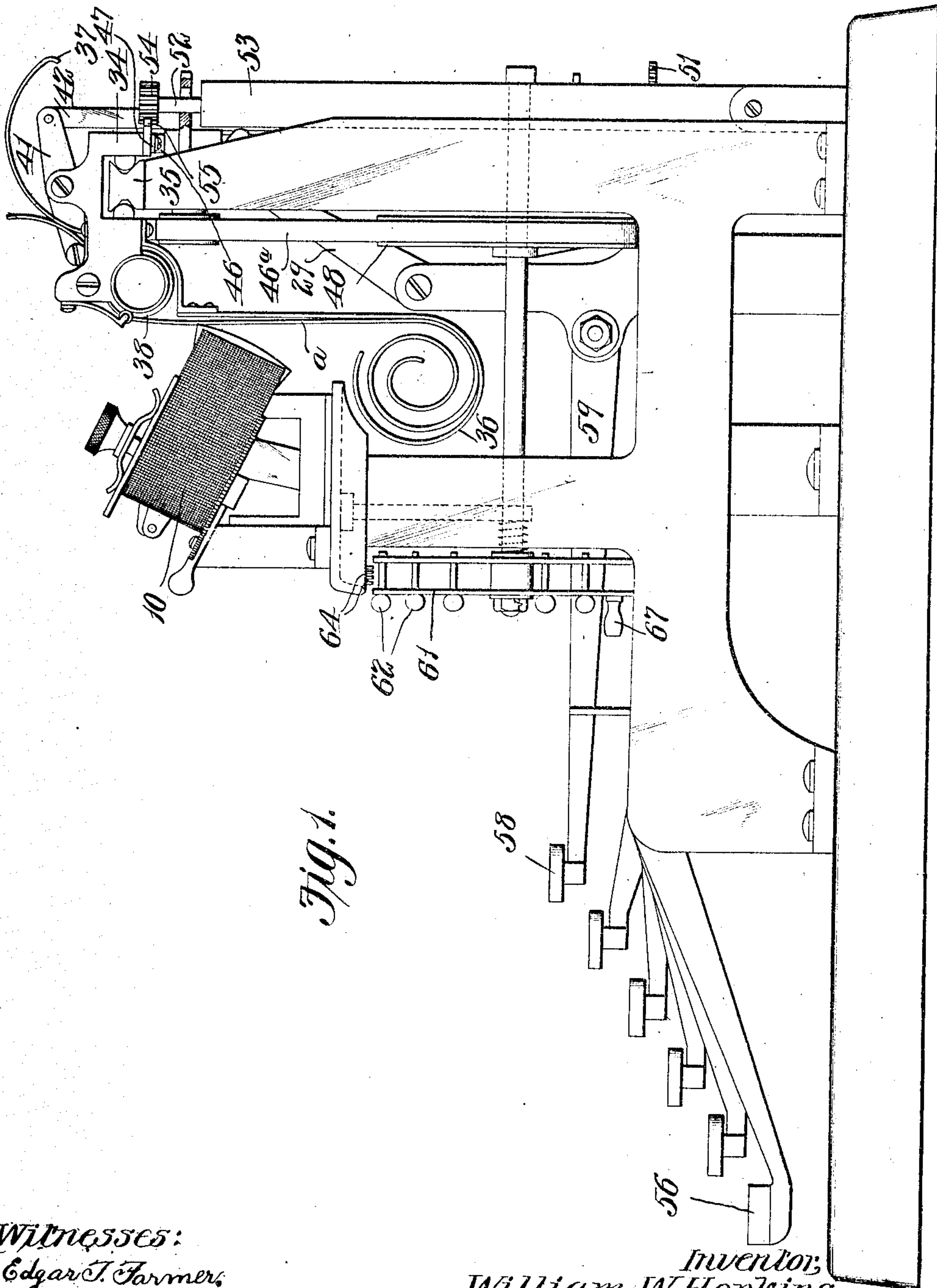


Fig. 1.

Witnesses:
Edgar T. Farmer,
Melb L. Church

Inventor,
William W. Hopkins.
By Hakewell Cornwall Atty.

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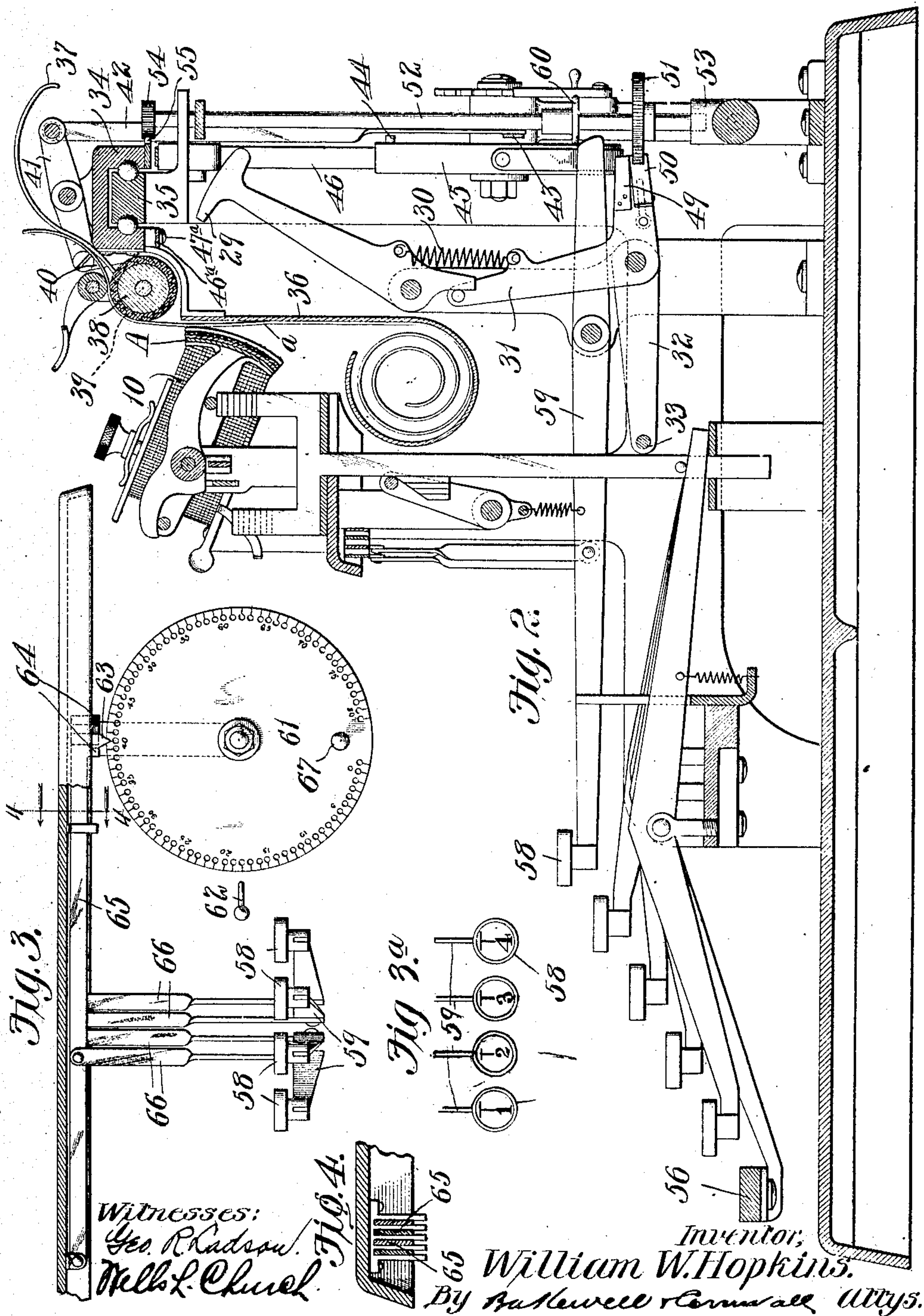
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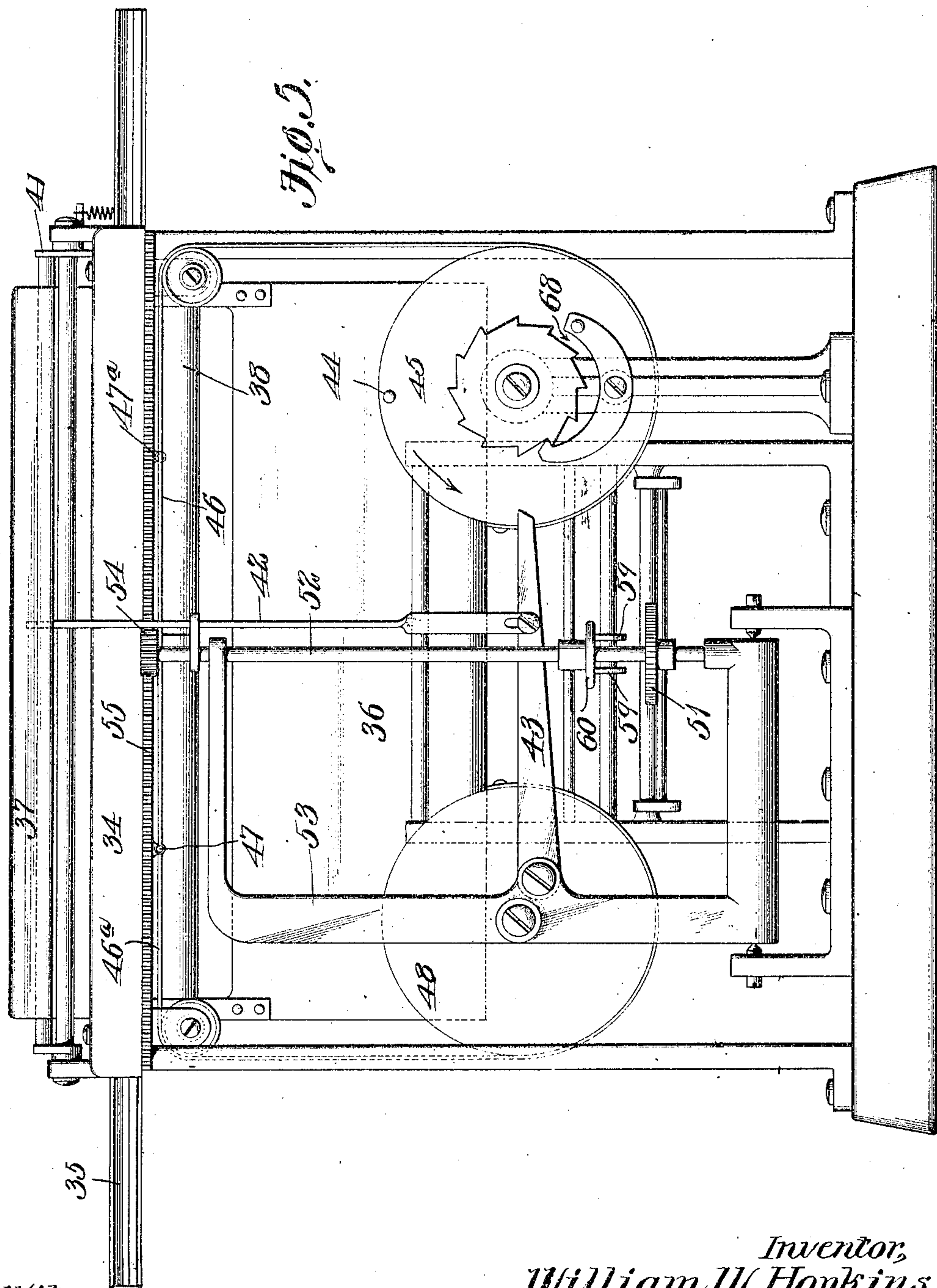
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3 SHEETS—SHEET 3.



Witnesses
Geo. R. Ladson.
Wells L. Church.

Inventor,
William W. Hopkins.
By Asa Kewell Cornwall
Atty's.

UNITED STATES PATENT OFFICE.

WILLIAM W. HOPKINS, OF ST. LOUIS, MISSOURI, ASSIGNOR, BY MESNE ASSIGNMENTS, TO
THE MOON-HOPKINS BILLING MACHINE COMPANY, OF ST. LOUIS, MISSOURI, A CORPO-
RATION OF MISSOURI.

CARRIAGE-STOP FOR TYPE-WRITING MACHINES.

No. 860,299.

Specification of Letters Patent.

Patented July 16, 1907.

Application filed December 4, 1906. Serial No. 346,273.

To all whom it may concern:

Be it known that I, WILLIAM W. HOPKINS, a citizen of the United States, residing at St. Louis, Missouri, have invented a certain new and useful Improvement in Carriage-Stops for Type-Writing Machines, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a side elevation of a typewriting machine embodying the features of my invention; Fig. 2 is a vertical cross sectional view of said machine; Fig. 3 is a detail view of parts of the tabulating mechanism; Fig. 3^a is a plan view of the tabulating keys; Fig. 4 is a sectional view on the line 4—4 of Fig. 3; and Fig. 5 is a rear elevation of the machine shown in Fig. 1.

This invention relates to typewriting machines and has for its object to provide a novel means for arresting the paper carriage at several different points in its lateral or transverse movement as is necessary when tabulating work is being performed. I have not herein described the complete machine of which the stop mechanism herein claimed forms part as said machine is shown and described in my pending application Serial No. 330,726, filed August 15, 1906.

Referring to the drawings which represent the preferred form of my invention, A designates the type segment which is mounted on a frame that is actuated by suitable mechanism to move the type segment into operative position with the printing hammer 29 which forces the paper *a* and inking ribbon 10 into engagement with the characters on the type segment, the paper *a* being mounted in a carriage that moves transversely of the machine. This printing hammer is normally held retracted by a spring 30, but is moved forward to make a printing impression by means of an arm 31 forming one member of a bell crank lever of which the arm 32 is the other member. Arm 32 carries a bar 33 which extends over the rear ends of the key levers 3. Whenever any of the keys are depressed the rear ends of the key levers, when approaching the upper limit of their movement, will strike the bar 33, rock the bell crank lever above described and force the type hammer against the type which has been positioned at the printing point. Spring 30 will immediately recover the type hammer and restore the bell crank lever to normal position.

The paper carriage before referred to consists of a

frame 34 mounted to move along a track 35. On this frame is arranged an apron 36 for receiving and supporting the lower end of a sheet of paper *a*. An overhanging guard 37 is provided for supporting the upper end of the sheet of paper.

38 is a rubber-faced feed roller on one end of which is arranged a ratchet 39.

40 is a paper feed pawl cooperating with ratchet 39 and mounted on the end of lever 41, upon whose opposite end is a link 42, which link, as shown in Fig. 2, is pivotally connected to an arm 43 whose end extends into the path of movement of a pin 44 on the drum 45 containing the motor spring for the carriage. A cable 46 extends from this spring drum 45 over sheaves and is connected to the carriage at the point 47. Another cable 46^a is connected to a supplemental spring drum 48 and to the carriage at the point 47^a. Whenever spring drum 45, rotating in the direction of the arrow in Fig. 5, engages the arm 43 by means of pin 44, the paper feed pawl will be operated so as to line-space the paper. Pin 44 is so positioned on drum 45 that it strikes the arm 43 as the paper carriage is moved to the right to start a new line.

The bell crank lever 31—32 carries an escapement mechanism comprising a fixed tooth 49 and a yielding tooth 50, said teeth cooperating with an escapement wheel 51, which escapement wheel is mounted on shaft 52 journaled in the pivotal frame 53, and carries at its upper end a pinion 54 which normally meshes with a rack 55 carried by the paper carriage. Whenever a key is depressed the bell crank lever 31—32 is vibrated and the escapement wheel 51 permitted to rotate a distance of one tooth, which permits movement of the paper carriage a distance of one letter space.

56 indicates a space key, the rear ends of whose levers extend under the bar 33.

58 indicates tabulating keys, the rear ends of whose bars 59 are beveled, as shown in Fig. 2. Whenever a tabulating key 58 is depressed the beveled end thereof engages a collar 60 on the shaft 52 and rocks frame 53 rearwardly so as to disengage the pinion 64 from the rack 55. When the paper carriage is thus disconnected under the restraining influence of the escapement mechanism, the motor spring in the spring barrel 45 moves the carriage toward the left. The spring in barrel 45 is stronger than the spring in barrel 48, and consequently whenever the carriage is traveling toward the left a like spring in barrel 48 is being wound up in readiness, whenever the carriage moves

toward the right, to take up slack in the cable 46^a and return to zero position, a stop disk 61 fixed on the forward end of shaft which supports the spring drum 48.

Referring to Figs. 1 and 3, it will be observed that the stop disk 61 is composed of two plates having perforations adjacent to their periphery in which may be placed removable pins 62. These perforations are given numbers constituting a line scale. A pointer, 63 coöperates with this scale or dial, as it might be called, and the operator by looking at the position of the dial with relation to said pointer may adjust the carriage or determine the exact position of the printing point in a line. This dial, when a pin or pins is inserted in the openings thereof, constitutes a stop disk by coöperating with the bent ends 64 of levers 65 connected by links 66 with tabulating keys respectively. When a tabulating key is depressed and the pinion 54 disengaged from the rack on the carriage, one of the stops 64 will be positioned in the path of movement of a pin 62, and the carriage will be arrested in the position thus determined by the pin. When the carriage is so arrested the tabulating key is released so as to restore engagement between the pinion 54 and rack 55. At the same time the projection 64 is raised out of engagement with the stop disk.

Four tabulating keys are provided for the purpose of arresting the carriage in four different positions without changing the position of the pin 62. The reason for doing this is to enable the operator to correctly position the numbers one under the other in proper column order in tabular work. For instance, in making out bills if the extension contains three figures the tabulating key marked "3" is depressed. If the extension contains only one figure the tabulating key marked "1" is depressed, and the carriage will be arrested so that when a printing impression is made after the operation of the "1" tabulating key the number printed will be in the column of lowest order. For a number containing four figures a tabulating key marked "4" is operated to correctly position the carriage so as to print tens of dollars, units of dollars, dimes and cents in their proper columns, if a decimal point is used; or thousands, hundreds, tens and units in their proper columns if no decimal point is employed. The stop disk 61 is provided with a handle 67 by which said stop disk and its connected parts may be rotated. By this method the spring drum 48 may be rotated and with it the spring drum 45. It is obvious that the only direction in which the stop disk can be rotated by the handle when the parts are in normal position is that permitted by the yielding escapement tooth 50, which direction is equal to the movement of the carriage to the right. Thus if it was desired to print a column of numbers, the operator would strike an appropriate tabulating key so as to jump the carriage to proper position at which the number could be printed. Then the parts could be so adjusted that partial rotation of the stop disk would cause the line-spacing mechanism to operate and the carriage to be re-set to be jumped by the depression of another tabulating key.

If the stop pin 62 were so positioned as to cause the carriage to be arrested in four different positions in its travel upon the depression of any one of the tabulating keys, it will be observed that the escapement mechanism will be disconnected from the driving mechanism a number of times, but this will not disturb the relation between the carriage and the spring drums 45 and 48 and their connected parts. The cables 46 and 46^a connected to the two drums are also attached to the carriage, and in this manner, regardless of the position of the carriage, the drums 45 and 48 will bear fixed relation thereto. Any ordinary means such as ratchet and pawl mechanism 68 may be employed for holding the spring in drum 45 under varying tensions.

I am aware that minor changes in the construction, arrangement and combination of the several parts of my device can be made and substituted for those herein shown and described without in the least departing from the nature and principle of my invention.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. In a typewriting machine, the combination with a laterally movable carriage, an escapement mechanism therefor comprising a pivotally mounted escapement shaft, a tabulating key adapted to engage and move said escapement shaft to disconnect the escapement mechanism from the carriage, a rotatable stop disk connected to and movable with the carriage, and means that is moved into operative position by the depression of said tabulating key for arresting the motion of said disk; substantially as described. 85
2. In a typewriting machine, the combination with a traveling carriage, a motor spring for causing the travel of said carriage in one direction, an escapement mechanism for controlling the travel of said carriage and comprising a pivotally mounted escapement shaft, a vertically disposed perforated disk located at the front of the machine and connected to said carriage, a dial on said disk, a stationary pointer coöperating therewith, movable stop pins designed to be arranged in the perforations of said disk, a tabulating key having a rearward extension which engages and moves said escapement shaft to release the carriage from the escapement mechanism, and a stop placed in the path of the movable stop pins on said disk; substantially as described. 90
3. In a typewriting machine, the combination with a traveling carriage, two drums containing opposing springs, one of which is a master spring for the carriage, a cable connecting said spring drums with said traveling carriage, an escapement mechanism comprising a pivotally mounted escapement shaft for controlling the action of said master spring upon the carriage, a disk containing adjustable stops and connected to the spring drum containing the weaker spring, and a tabulating key for engaging and moving the escapement shaft to render the escapement mechanism inoperative and placing a projection in the path of movement of the adjustable stop carried by said disk; substantially as described. 95
4. In a typewriting machine, the combination with a traveling carriage having a rack, a pinion meshing with said rack, a shaft on which said pinion is mounted, a swinging frame in which said shaft is journaled, a ratchet wheel on said shaft, escapement mechanism coöperating with said ratchet wheel, tabulating key levers directly engaging said shaft for swinging said frame and disengaging said pinion from said rack whereby said escapement mechanism is rendered inoperative, a plurality of stop levers of different lengths adapted to be actuated by said tabulating keys, and a vertically disposed stop disk coöperating with said stop levers and adapted to be re- 100

tated by the movement of the carriage; substantially as described.

5 In a typewriting machine, the combination with a carriage, means for moving said carriage laterally, escapement mechanism for said carriage-actuating means comprising a pivotally mounted escapement shaft, a horizontal shaft provided at its front end with a stop disk which is always exposed to the view of the operator, means for causing the movement of the carriage to rotate 10 said shaft in one direction, a spring for rotating said shaft in the opposite direction to return the stop disk to zero position, a plurality of stop levers of different

lengths adapted to cooperate with said disk, and tabulating levers for actuating said stop levers and also for engaging and moving the escapement shaft to cause said escapement mechanism to become inoperative; substantially as described. 15

In testimony whereof I hereunto affix my signature in the presence of two witnesses, this twenty seventh day of November 1906.

WILLIAM W. HOPKINS.

Witnesses:

WELLS L. CHURCH,
GEORGE BAKEWELL.