

A. A. JOHNSON.
TYPE WRITING MACHINE.
APPLICATION FILED SEPT. 25, 1914.

1,208,322.

Patented Dec. 12, 1916.

Fig. 1.

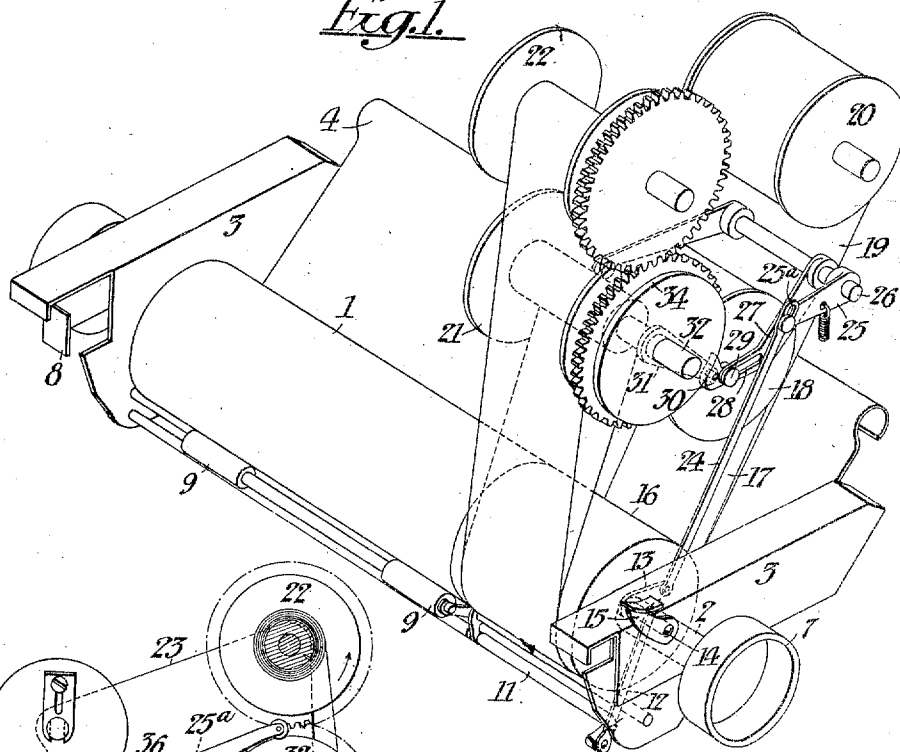


Fig. 2.

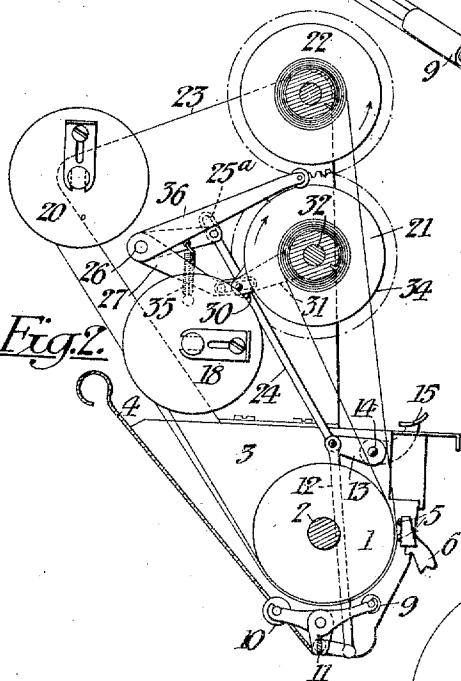


Fig. 3.

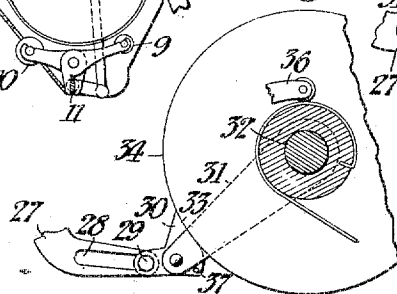
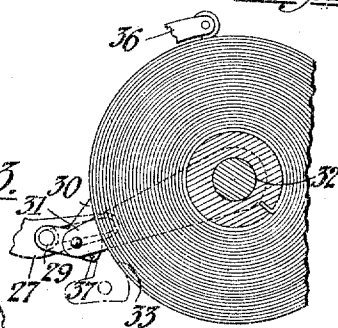


Fig. 4.



Witnesses:

W. C. Westphal
Julius Ruckelshaus

Inventor

Arthur A. Johnson
by *B. C. Hickney*
His Attorney.

UNITED STATES PATENT OFFICE.

ARTHUR A. JOHNSON, OF NEW YORK, N. Y., ASSIGNOR TO UNDERWOOD TYPEWRITER COMPANY, OF NEW YORK, N. Y., A CORPORATION OF DELAWARE.

TYPE-WRITING MACHINE.

1,208,322.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, ARTHUR A. JOHNSON, a citizen of the United States, residing in the borough of Bronx, in the county of Bronx, city and State of New York, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

The object of my invention is to provide improved means whereby the tally strip of a billing-typewriting machine may be line-spaced around the platen evenly the same distance at each operation regardless of the amount of paper on the winding spool of the tally strip device.

It is usually the case that, as the diameter of the winding spool or reel grows larger, the greater becomes the intake per revolution. This condition is undesirable, especially in a tally strip, where an object is to obtain as compact a list of numbers as is possible, for it will be seen that as the spool or reel fills, the paper strip will feed faster, thereby causing each number or line to be written farther away from the preceding one than the latter was from the one before it. To overcome this condition, I decrease the extent of angular rotation of the intake or winding reel as the paper winds on said reel.

Heretofore it has been proposed to compensate for the uneven line-spacing above referred to by interposing between the winding spool and the platen a step-by-step feeding mechanism, in addition to the means to wind the strip on the spool, the latter means comprising compensating mechanism to adapt the rate of winding to the increasing diameter of the roll on the winding spool. In accordance with the present invention, the winding spool operates directly by a step-by-step rotation to draw the web over the platen, the amplitude of rotation at each step being directly controlled by the size of the roll on the spool. The need of intermediate step-by-step mechanism to effect a uniform feed is thus avoided and the feeding mechanism greatly simplified.

In practising the invention, the winding spool for the tally strip may have a step-by-step rotation imparted thereto by means of a reciprocating driver or arm mounted on the axle of the spool and having a one-way driving dog or clutch member to en-

gage a clutch surface connected with the winding spool and advance the spool a step at each complete reciprocation of the driver. The latter may be actuated by a key having a lost-motion connection therewith. A compensating arm bearing on the roll of web on the winding spool is positioned thereby to gradually introduce the lost motion between the operating key and driver as the diameter of the roll increases, to correspondingly reduce the throw of the driver, whereby a uniform line-spacing of the web is effected.

The tally strip may be used in connection with work-sheets fed over a roller platen, which sheets extend laterally into position to overlie the tally strip. The usual key for throwing the feed rolls for said sheets off the platen, may serve as the actuating key for the tally-strip-feeding mechanism, whereby the tally strip is line-spaced each time the feed rolls are thrown off, to permit a sheet to be removed and replaced by a succeeding sheet.

Other features and advantages will hereinafter appear.

In the accompanying drawing, Figure 1 is a perspective view of an Underwood platen frame, with my device attached, but omitting the support. Fig. 2 is a side elevation of a platen frame with tally strip showing the device just after having fed the strip. Fig. 3 is the normal position of the feeding device when the spool is practically empty. Fig. 4 shows the position of the feeding device at the end of the feeding stroke, but it will be understood that the view is diagrammatic, and that in practice the roll of paper need not become quite full.

In an Underwood machine, a cylindrical platen 1 is mounted by means of axle 2 to revolve in the ends 3 of a platen frame, which usually carries a paper shelf 4, inclining upwardly and rearwardly from the platen to aid the introduction of work-sheets into the machine. In said Underwood machine, types 5 are mounted on bars 6, to strike rearwardly against the front side of the platen 1. The platen is rotated either by knob 7, or by the ordinary reciprocating line-space mechanism 8. Front and rear pressure rolls 9 and 10 serve to press the sheets against the platen so that

the sheets will be fed around with the platen when said platen is rotated. A rock shaft 11 has the usual means to release said feed rolls. The releasing shaft 11 is connected by link 12 to a lever 13 pivoted at 14 upon an end of the platen frame. Said lever 13 is provided with a finger-piece 15, so that upon depression of the finger-piece, the pressure rolls are withdrawn from the platen to permit the ready insertion or withdrawal of the work-sheets.

At the right-hand end of the main platen 1, there is mounted loosely on the shaft 2, an auxiliary independently rotatable platen 16, over which is carried a tally strip 17 (from a spool 18) and a carbon strip 19 (from a spool 20); the leading end of the tally strip being fastened to receiving or winding spool 21, and the carbon strip end being fastened to receiving or winding spool 22. All of said spools are loosely supported in a frame 23 fixed to the platen frame.

After a bill has been written, the operator prints the total debit and credit on the portion of the bill extending over the carbon sheet on the auxiliary platen. This, it will be understood, causes the total debit and credit to be printed on the tally strip also. The operator then, in order to remove the bill, depresses the releasing key 15, thereby moving the feed rolls away from the platen.

When the releasing key is depressed, a link 24, pivoted to the arm 13 of said releasing device, is thrown upward, thereby rocking upwardly an arm 25, fast on a shaft 26 which is pivoted in the auxiliary frame 23; said link 24 and arm 25 having pin-and-slot connection at 25^a. An arm 27, also fast on the shaft 26, has a slot 28 to be engaged by a pin 29 of a clutching arm or dog 30, pivoted in an arm 31; said arm 31 being pivoted on the tally strip spool shaft 32. In the first part of the upward motion of the arm 27, the spool driving arm 31 is given a pivotal motion, thereby causing a clutching portion 33 of the clutch dog 30 to grip the periphery of a clutch disk 34, fast on the tally strip shaft 32. The continued upward movement of the arm 27 will rotate the disk 34, thereby feeding the tally strip a distance equal to the amount of one ordinary line-space.

The operator, having taken out the work-sheets, raises the finger-piece 15 to allow the feed rolls to press against the platen, so that a new work-sheet may be fed around the platen when the platen is rotated. When the releasing key is raised, the link 24 is pulled down, thereby allowing the spring 35 to return the feeding device until an arm 36, fast on the rock shaft 26, strikes against the paper on the tally strip spool. It will be seen that the next feeding operation of the spool will not be quite as great in extent as

the preceding operation. This difference between two successive operations, of course, is very small, but is cumulative, so that when the diameter of the roll of paper on the spool is doubled, for example, the arm 27 of the feeding device will be given only half the initial vibration. In other words, as the diameter of the paper roll increases, the amount of rotation given to the spool is correspondingly decreased; thereby feeding the paper the same amount each time the releasing key is operated.

The pin 37 on the arm 30 allows the arm 30 to be pivotally swung downwardly just enough to permit the clutching surface 33 to disengage the disk 34, and permit arm 30 with its lever 31 to swing down idly. The carbon intake roll and the tally strip roll may be geared together, thereby rotating both rolls with one feeding device.

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. The combination, with a platen; of a receiving spool to which a strip or web is led from said platen; line-spacing mechanism for imparting a positive, step-by-step, rotary movement directly to said spool, to directly and positively feed the strip over said platen and wind it up in a roll on said spool; and compensating mechanism, controlled by the rolled-up strip on the spool as the diameter of the roll increases, for automatically reducing, proportionately to such increase, the angle through which said spool is turned at each rotation thereof, so as to maintain constant the extent of advance of the strip at each rotation of the spool.

2. The combination, with a platen; of a receiving spool to which a strip or web is led from said platen; line-spacing mechanism for imparting a positive, step-by-step, rotary movement directly to said spool, to directly and positively feed the strip over said platen and wind it up in a roll on said spool; and compensating mechanism, controlled by contact with the rolled-up strip on the spool as the diameter of the roll increases, for automatically reducing, proportionately to such increase, the angle through which said spool is turned at each rotation thereof, so as to maintain constant the extent of advance of the strip at each rotation of the spool.

3. The combination with a revoluble platen, of means to supply a web or strip to be fed around the platen, a winding spool on which the leading end of the web is wound, manually operated line-spacing mechanism for positively rotating the winding spool step by step and thereby causing it to line-space said web at the platen, and a device to compensate for the increasing di-

ameter of the web on the spool as the latter is rotated, said device arranged to bear on the periphery of the roll of web on the spool, and operative by its change in position as the roll increases, to reduce the extent of each step-by-step rotation of the spool substantially in proportion to the increase in the diameter of said roll.

4. The combination, with a platen; of a receiving spool to which a strip or web is led from said platen; line-spacing mechanism for imparting a positive, step-by-step, rotary movement directly to said spool, to directly and positively feed the strip over said platen and wind it up in a roll on said spool, said mechanism comprising a wheel connected to drive the spool, and a reciprocating driver having a one-way driving connection with said wheel; and compensating mechanism controlled by the rolled-up strip on the spool as the diameter of the roll increases, for automatically reducing, proportionately to such increase, the angle through which said spool is turned at each rotation thereof, so as to maintain constant the extent of advance of the strip at each rotation of the spool.

5. The combination with a platen, of mechanism for feeding a web or strip over the platen, comprising a winding spool or spindle on which the leading edge of the strip is wound in a roll, line-spacing mechanism comprising a wheel connected to rotate the spool, a driving arm pivoted concentric of said wheel, a pawl or gripping member on said arm having a one-way driving connection with the wheel, means to reciprocate said arm and thereby impart a step-by-step rotation to the spool and cause it to draw the web step by step over the platen, and a compensating device arranged to bear on the periphery of said roll, said compensating device comprising means to position the driving arm to correspond to the diameter of said roll and correspondingly vary the angle of rotation of said roll at each operation and thereby cause the web to be advanced through equal distances at successive rotations of the spool.

6. The combination with a platen, of a spindle or spool on which is wound in a roll the leading end of a web or strip fed over the platen, line-spacing mechanism comprising a wheel or disk connected to drive said spool and cause it to draw the web over the platen, an oscillating driving arm mounted on the axle of said wheel or disk, and having a one-way driving connection with said wheel, a key-operated member for oscillating said arm, and a compensating device bearing against the roll on said spool and forming a stop or gage to determine the range of movement of said driving arm; said compensating device operative by its change of position as the roll increases in diameter, to de-

crease the throw of said driving arm and thereby cause the web to be fed through equal distances at each operation.

7. In a typewriting machine, the combination, with a main platen and an auxiliary platen; of a receiving spool or spindle to which a strip or web is led from the auxiliary platen; feed rolls to bear against a work-sheet on the main platen; a key-operated device for moving the feed rolls off said main platen; line-spacing mechanism operated by the key for imparting a positive, step-by-step, rotary movement directly to said spool, to directly and positively feed the strip over said auxiliary platen and wind it up in a roll on said spool; and compensating mechanism operable automatically to reduce the angle through which said spool is rotated by said key in proportion as the diameter of the roll increases, so as to maintain constant the extent of advance of the strip at each rotation of the spool.

8. In a typewriting machine, the combination, with a main platen, and an auxiliary platen rotatable relatively thereto; of a receiving spool or spindle to which a tally-strip is led from the auxiliary platen; feed rolls for the main platen; a finger key for throwing off said feed rolls; a line-spacing device for imparting a positive, step-by-step, rotary movement directly to said spool, to directly and positively feed the tally-strip over said auxiliary platen and wind it up in a roll on said spool, said device operable by said key; and compensating means controlled by the rolled-up strip on the spool as the diameter of the roll increases, for automatically reducing, proportionately to such increase, the angle through which said spool is turned by said key, so as to cause the tally-strip to be advanced the same line-space distance at each actuation of said key.

9. In a typewriting machine, the combination with a main roller platen, of a tally strip platen, a winding spool on which is wound the leading end of a tally strip fed over the tally strip platen, a second winding spool on which is wound a carbon strip extending over the tally strip platen, means forming a driving connection between said spools to cause them to rotate in unison, feed rolls for the main platen, a key for throwing said feed rolls off their platen, a line-spacing device operable by said key to impart a step-by-step rotation to said spools, and a compensating device to bear on the roll on one of said spools, the position of said compensating device determined by the diameter of the roll on which it bears, said compensating device operable by its position to control the angle through which said spools are rotated at each operation of said key, to thereby cause the angle of rotation of each spool to be automatically reduced as the diameter of the roll thereon increases, so

that said tally strip and carbon strip are advanced at the same rate and through equal distances at each operation of said key.

10. In a typewriting machine, the combination, with a platen; of a receiving spool to which a strip or web is led from said platen; a supply spool on which the strip is initially wound and from which it is led to said platen; line-spacing mechanism for imparting a positive, step-by-step, rotary movement directly to the receiving spool, to directly and positively feed the strip over said platen and wind it up in a roll on said receiving spool; and compensating mechanism, controlled by the rolled-up strip on one of said spools as the diameter of the roll on that spool changes, for automatically reducing, proportionately to such change, the angle through which the receiving spool is turned at each rotation thereof, so as to maintain constant the extent of advance of the strip at each rotation of said receiving spool.

11. In a web-feeding mechanism, the combination with a feeding roll and a receiving roll, of a driving device for said receiving roll mounted on the axle thereof, and a compensating device for actuating said driving device, comprising an element arranged to rest upon the periphery of the paper wound up on the receiving roll, and an element having a lost-motion connection with said driving device.

12. In a web-feeding mechanism, the combination with a roll; of a driving device mounted on the axle of the roll, and a compensating device for actuating said driving device comprising an element connected to operate said device, and an element connected to be operated by the first-named element and arranged to engage the periphery of the web wound up on said roll for regulating the effective stroke of the said first-named element.

13. In a web-feeding mechanism, the combination with a winding spool to receive a web, of means to rotate the spool step by step to wind the web in a roll thereon, said means comprising a reciprocating driver having a one-way driving connection with the spool to advance the latter a step at each complete reciprocation of the driver, and a compensating device bearing on the roll and connected to the driver to position the latter to correspond with the diameter of the roll and thereby so control the length of throw of the driver that the web is advanced by the winding spool the same distance at each reciprocation of the driver.

14. In a web-feeding mechanism, the combination with a winding spool to receive a web, of a reciprocating driver having a one-way driving connection with the winding spool to rotate the latter step by step to wind the web in a roll thereon, an actuating

device for said driver, said actuating device operable through the same distance at each operation and having a lost-motion connection with the driver, and a compensating device whose position is controlled by the diameter of the roll, said compensating device arranged to gradually introduce lost-motion between the driver and actuating device as the diameter of the roll increases, to thereby reduce the length of throw of the driver at each reciprocation and correspondingly reduce the angle through which the spool is rotated.

15. In a web-feeding mechanism, the combination with a winding spool or spindle to receive a web and wind it in a roll thereon, of a driving device mounted to reciprocate on the axle of the winding spool, a one-way driving clutch member carried by said driving device and arranged to engage a clutch surface carried with the winding spool, a compensating device arranged to position the driving device to correspond with the diameter of the roll, and a key-operated actuator for said driving device having a lost-motion connection therewith so that lost motion is introduced between said actuator and the driving device as the latter is shifted, to reduce the angle through which the winding spool is driven at each operation.

16. In a web-feeding mechanism, the combination with a winding spool to receive a web, of means to effect step-by-step rotation of the spool to wind the web in a roll thereon, said means comprising a driving device mounted to reciprocate on the axle of said spool and having a one-way driving connection with the spool, a rock shaft, a rock arm thereon to position and actuate said driving device, a compensating arm on said rock shaft arranged to bear against the roll on the spool and thereby variably control the normal or rest position of the driving device to correspond with the diameter of the roll, and actuating means to rock said shaft and thereby cause the driving device to be reciprocated at each operation through an angle inversely proportional to the diameter of the roll, whereby a uniform step-by-step feed of the web is effected.

17. In a web-feeding mechanism, the combination with a winding spool to receive a web, of means to effect step-by-step rotation of the spool to wind the web in a roll thereon, said means comprising a driving device mounted to reciprocate on the axle of said spool and having a one-way driving connection with the spool, a rock shaft, a rock arm thereon to position and actuate said driving device, a compensating arm on said rock shaft arranged to bear against the roll on the spool and thereby variably control the normal or rest position of the driving device to correspond with the diameter of the roll, and actuating means to rock said shaft, said

actuating means comprising a key, and a link connected to the key and having a lost-motion connection with said rock shaft, permitting said rest position of the driver to be controlled by said compensating arm without varying the normal position or length of throw of the key.

18. In a web-feeding mechanism, the combination, with a web-receiving spool, and its axle; of a driving device for rotating said spool to wind up the web thereon, said device comprising an arm pivoted on said axle and provided with a movable clutching dog, and an actuating member acting initially to move said dog relatively to said arm into clutching engagement with said spool and thereafter to move said arm and dog as a unit, so as to rotate the spool.

19. In a web-feeding mechanism, the combination, with a web-receiving spool, and its axle; of a driving device for rotating said spool to wind up the web thereon, said device comprising an arm pivoted on said axle and provided with a movable clutching dog, an arm having a lost-motion connection with said dog, so as to initially move said dog relatively to the first-named arm into clutching engagement with said spool, and to thereafter move said first-named arm and dog as a unit, and a member connected to operate the second-named arm.

20. In a web-feeding mechanism, the combination, with a web-receiving spool, and its axle; of a driving device for rotating said spool to wind up the web thereon, said device comprising an arm pivoted on said axle and provided with a movable clutching dog, a member connected with said dog for positioning and actuating said arm, a compensating member connected with said actuating member and arranged to bear upon the rolled-up strip on said spool, so as to variably control the normal or rest position of said arm to correspond with the diameter of the roll, and means for operating said actuating member, the latter when so operated,

acting initially to move said dog relatively to said arm into clutching engagement with said spool, and thereafter to move said arm and dog as a unit, so as to rotate the spool.

21. The combination, with a main platen, and an auxiliary platen; of a receiving spindle or spool to which a strip or web is led from said auxiliary platen; line-spacing mechanism for directly and positively feeding the strip and winding it up in a roll on said spool, said auxiliary platen rotating relatively to said main platen at each line-spacing operation; and compensating mechanism operating automatically at each line-spacing operation, to gradually reduce the amount of strip wound up on the spool in proportion as the diameter of the roll increases, so as to maintain constant the extent of advance of the strip and the extent of angular rotation of the auxiliary platen at each line-spacing operation.

22. The combination, with a main platen, and an auxiliary platen; of a receiving spindle or spool to which a strip or web is led from said auxiliary platen; feed rolls to bear against a work-sheet on the main platen; a key-operated device for moving the feed rolls off said main platen; line-spacing mechanism operated by the key for directly and positively feeding the strip and winding it up in a roll on said spool, said auxiliary platen rotating relatively to said main platen at each line-spacing operation; and compensating mechanism operating automatically at each line-spacing operation, to gradually reduce the amount of strip wound up on the spool in proportion as the diameter of the roll increases, so as to maintain constant the extent of advance of the strip and the extent of angular rotation of the auxiliary platen at each line-spacing operation.

ARTHUR A. JOHNSON.

Witnesses:

W. O. WESTPHAL,
JULIUS DUCKSTINE.