M. H. JOHANSON.

CHECK WRITER.

APPLICATION FILED APR. 26, 1917.

1,350,459. Patented Aug. 24, 1920.

3 SHEETS—SHEET 1.

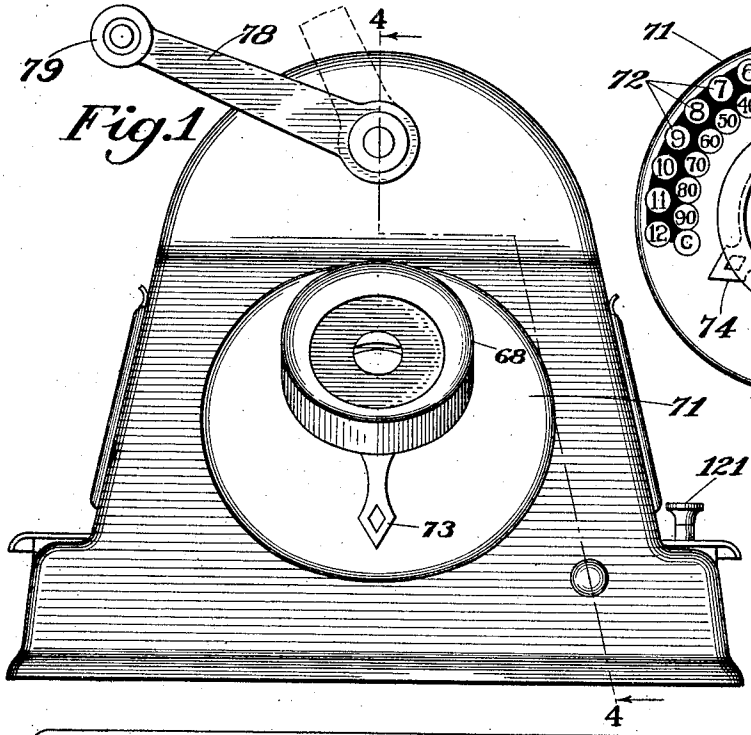


Fig. 1.

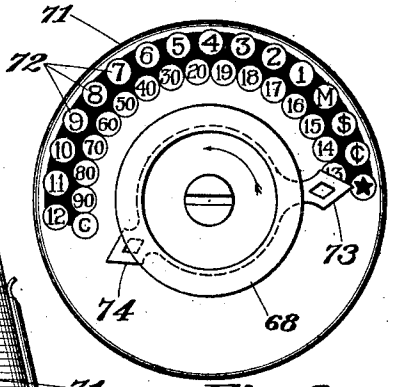


Fig. 8.

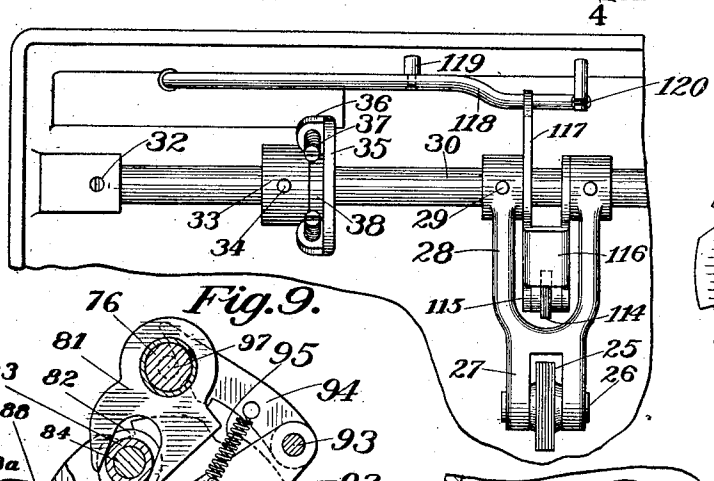


Fig. 9.

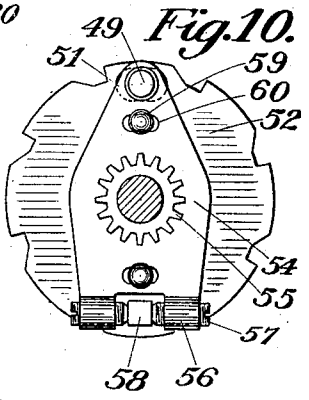


Fig. 10.

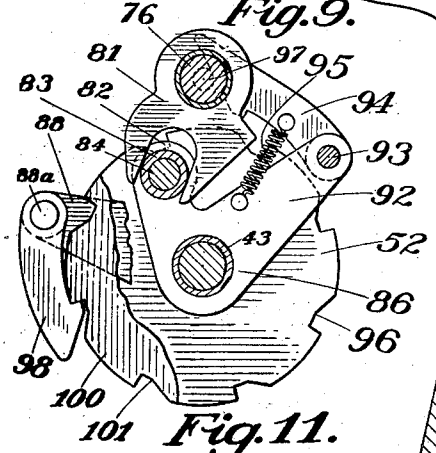


Fig. 11.

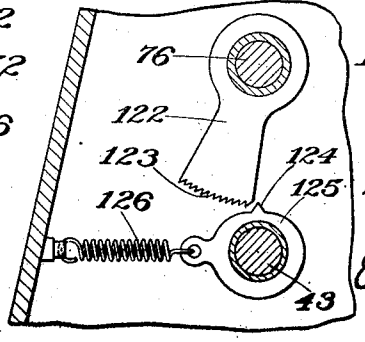


Fig. 12.

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3 SHEETS—SHEET 2.

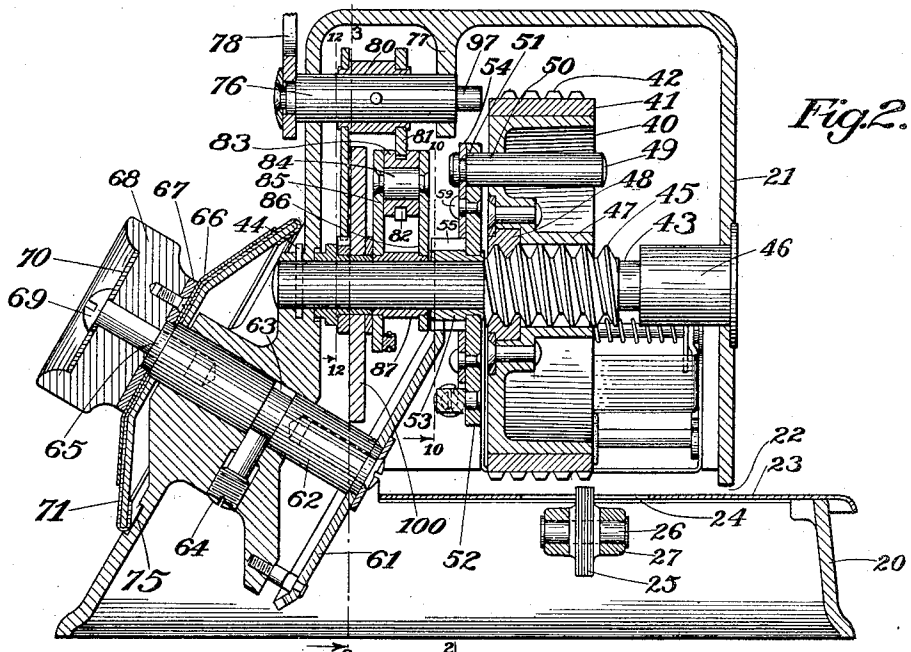


Fig. 2.

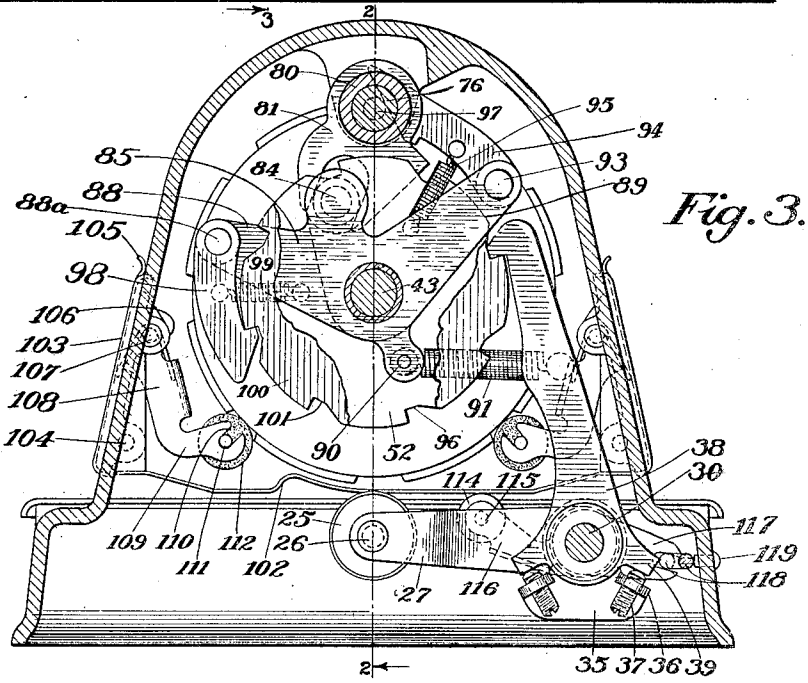


Fig. 3.

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3 SHEETS—SHEET 3.

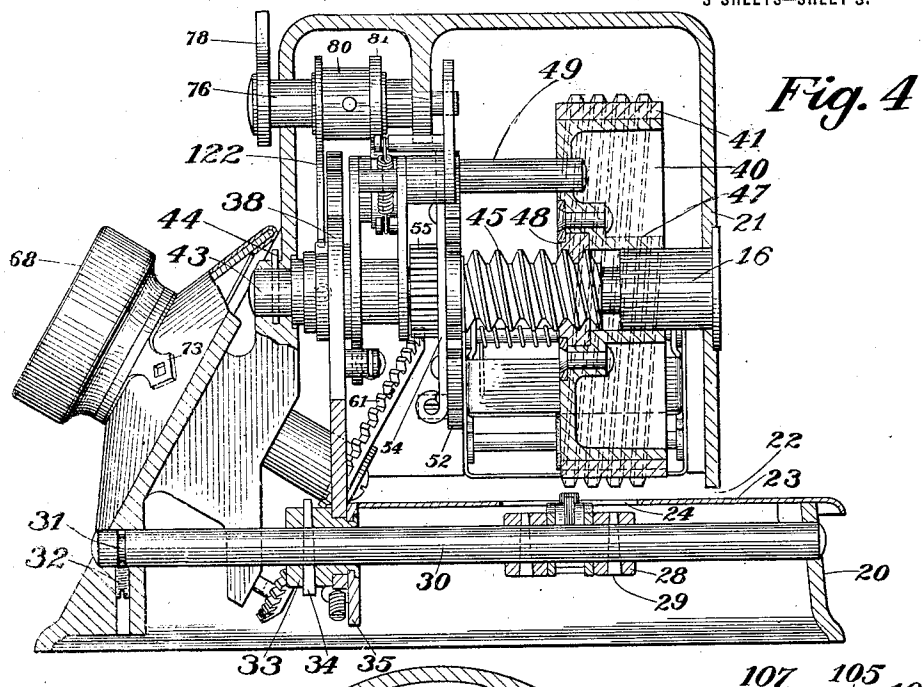


Fig. 4

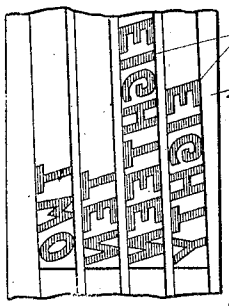


Fig. 6.

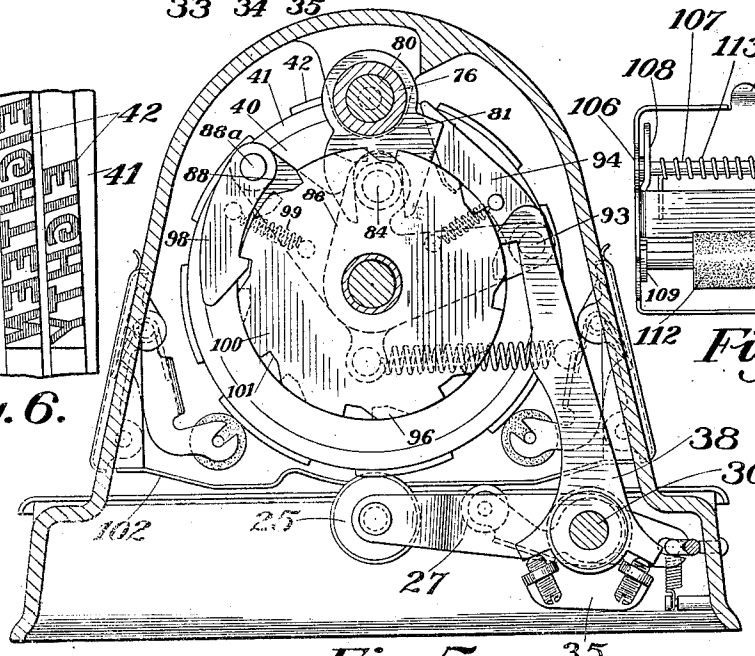


Fig. 5.

Fig. 7.

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UNITED STATES PATENT OFFICE.

MAGNUS H. JOHANSON, OF ROCHESTER, NEW YORK, ASSIGNOR TO TODD PROTECTOGRAPH CO., OF ROCHESTER, NEW YORK.

CHECK-WRITER.

1,350,459. Specification of Letters Patent. Patented Aug. 24, 1920.

Application filed January 12, 1916. Serial No. 71,648.

To all whom it may concern:

Be it known that I, MAGNUS H. JOHANSON, of Rochester, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Check-Writers; and I do hereby declare the following to be a full, clear, and exact description of the same, such as will enable any person skilled in the art to which the invention appertains to make and use the same.

The present invention relates to an improvement in printing machines, and, more particularly, to an improvement in the kind of hand stamps known as "check writers," and employed for marking amounts or other inscriptions upon checks, drafts, receipts, and like forms of paper, for the purpose of preventing fraudulent alteration thereof.

One object of the invention is the provision of a machine of this variety of simple, compact, and inexpensive construction, and capable of performing its functions in a convenient and efficient manner.

Another object of the invention is the provision of a machine operating to print and feed the work by a rotary movement of the types, in which the latter are compactly arranged upon a carrier so that but a slight displacement of the carrier is required to bring the individual types, selectively, to a common printing position.

Another object of the invention is to so arrange the types on the carrier that the latter may be rotated about a single axis for bringing the individual types, selectively, to a common printing position, and also for moving the selected types into rolling printing engagement with the work.

Another object is to provide simple and reliable mechanism effecting a relative adjustment of the carrier and platen for selecting the types to be printed, and also for effecting a relative movement of the carrier and platen to print and feed the work.

Another object is the provision of an inking device capable of moving with the carrier so as to maintain inking relation with the types in any position of the carrier.

These and other objects and advantages are fully set forth in the following detailed description of one embodiment of the invention, selected for purpose of illustration, and shown in the accompanying drawings, in which:

Figure 1 is a front elevation of the machine.

Fig. 2 is a vertical section on the line 2—2, of Fig. 3 looking in the direction indicated by the arrow.

Fig. 3 is a vertical section on the line 3—3 of Fig. 2, looking in the direction of the arrow, the parts being shown in normal or inactive position, and partly broken away.

Fig. 4 is a vertical section substantially on the line 4—4 of Fig. 1 looking in the direction of the arrow.

Fig. 5 is a view similar to Fig. 3, but with the parts shown in the positions occupied during a printing impression.

Fig. 6 is a fragmentary view of the face of the type carrier, showing the arrangement of the types thereon.

Fig. 7 is a view from the inside of the machine of one of the inking devices detached.

Fig. 8 is a face view of the dial and pointers for selecting the types.

Fig. 9 is a plan view of a portion of the bottom of the machine showing the platen and presser foot mechanisms.

Fig. 10 is a detail elevation taken on the line 10—10 of Fig. 2, looking in the direction of the arrow.

Fig. 11 is a sectional elevation of parts of the operating mechanism taken substantially on the line 3—3 of Fig. 2, looking in the direction of the arrow, with parts broken away.

Fig. 12 is an elevation of the full stroke attachment for the operating mechanism taken on the line 12—12 of Fig. 2, looking in the direction of the arrow.

This invention provides a machine which is particularly useful in printing monetary values upon checks, drafts, receipts and similar forms of paper, employing for this purpose types representing a series of whole words which may be successively impressed upon the work at a common printing point in selected combinations to express any one of a wide range of values entirely in words, thus forming an inscription which is more

difficult of alteration than one expressed in figures. Since these words, such, for example, as "One" and "Seven," are normally of different lengths, it is desirable to feed the work a variable distance in connection with each impression, and this is accomplished by using a rolling impressing movement of the type and platen so that the latter parts themselves feed the work in accordance with the lengths of the types employed and thus obviate the use of a separate feeding mechanism.

In its present embodiment the invention comprises preferably, a casing for supporting and housing the operating parts having a base portion 20, (Fig. 2), and an upper portion 21 separated from the base portion by a work receiving slot 22 extending horizontally into the machine from the rear; above the work supporting bed 23. This bed is provided near its center with an opening 24, through which is adapted to be raised and lowered a platen comprising a roller 25 rotatably carried by a spindle 26 journaled in the forked end of a lever 27 below the work bed. The lever 27 is preferably formed at its other end with branched arms 28 (Fig. 9), fixed by pins 29 on a shaft 30 extending from front to rear of the machine with its ends journaled in the walls of the casing. The shaft 30 is provided with means for preventing endwise movement thereof, such for example, as the slot 31 (Fig. 4) with which is engaged a screw 32 supported by the casing. Shaft 30 carries, preferably, a sleeve 33 fixed thereto by a pin 34, and fixed on this sleeve is a yoke 35 provided at either side of the shaft 30 with lugs 36 in which are supported the adjustable screws 37. Rotatably supported on the sleeve 33 is an arm 38 having projecting lugs 39 each adapted to contact with one of the screws 37. The arm 38 engages at its upper end with a cam presently to be described for rocking the shaft 30 and lever 27, and thereby moving the platen to and from position for rolling contact with the types in the casing above, and it will be seen that by means of screws 37 the position of arm 38 on shaft 30 may be adjusted so as to regulate the degree of pressure between the platen and the type.

The type carrier comprises, preferably, a cylinder or drum 40 on the periphery of which is fixed a type plate 41 bearing a plurality of types 42 shown in detail in Fig. 6. As indicated in the drawings, these types are arranged on the carrier in a row extending circumferentially thereof, the reading direction of the types being substantially coincident with the direction of the row. The row of type may extend in a plane which is normal to the axis of the carrier, or which makes any desired angle with the axis, and in the preferred form of the invention, as illustrated in the drawings, the type row extends spirally about the carrier at a slight angle of pitch. As indicated in Fig. 6, the types are also arranged in rows extending axially of the carrier with the termination of the types of each axial row in alinement with each other so as to form a line parallel with the axis of the carrier, for a purpose presently to be explained.

The carrier 40 is supported on a shaft 43 having its ends fitted in bearings in the walls of the upper portion of the casing, and held against rotation therein by a pin 44. This shaft is formed with a threaded portion 45 and a smooth shoulder 46, and the type carrier has a hub 47 rotatably and slidably mounted on the portions 45 and 46 of the shaft 43. The hub of the type carrier is also provided with a nut 48 fixed to the carrier and engaging the threaded portion 45 of the shaft so that rotation of the carrier 40 serves automatically to move it axially on the shaft 43.

The pitch of the spiral row of types and of the thread 45 on the shaft 43 is the same, and it will now be apparent that with a proper initial adjustment of the carrier and platen, the row of types will remain in registry with the platen during the rotation of the carrier, so that any individual type of said row may be brought to printing position adjacent the platen by the rotation of the carrier, ready for a subsequent printing operation as hereinafter described.

The means of rotating the type carrier to bring the individual types selectively to position for coöperation with the platen comprises, preferably, a pin 49 (Figs. 2 and 4) slidably engaging an aperture 50 in the radial wall of the type carrier, the pin projecting at its end through a slot 51 in a disk 52 rotatably supported on a sleeve 53. At its forward end pin 49 is fixed in a plate 54, which in turn is fixed on the sleeve 53 by the engagement thereof with the teeth of a pinion 55 formed on the forward end of the sleeve 53. The plate 54 has a forked lower end (Fig. 10) the branches 56 of which adjustably support screws 57 which engage opposite sides of a lug 58 on the disk 52 projecting forwardly between the branches 56 of plate 54. This construction permits the rotational adjustment of the screws 57, for a purpose which will be later understood. Disk 52 is provided with studs 59 engaging in slots 60 in the plate 54 for guiding the parts upon each other. Sleeve 53 is rotatable on shaft 43 and meshing with the pinion 55 on said sleeve is a gear 61 secured to the lower rear end of a shaft 62 rotatably supported in the forward wall of the casing and extending exteriorly thereof, the shaft being provided, preferably, with a slot 63 with which engages a pin 64 supported in the casing and serving to prevent endwise movement of the shaft 62.

Shaft 62, projecting outside the casing, has, at its outer end, a shoulder 65 on which is carried a plate 66 and a disk 67. Shoulder 65 is slabbed off on one side and the openings in the plate and disk which receive the shoulder are correspondingly formed so that these parts all rotate together. Fixed to the disk is a knob 68, and a screw 69, engaging in the end of the shaft 62 and bearing against a washer 70 on the knob, holds the knob, disk 67 and plate 66 securely in position on the shaft so that by means of the knob the shaft may be conveniently rotated, thereby rotating the type carrier through the connecting parts already described for the purpose of selecting the types. Plate 66 forms a part of an indicating device, now to be described.

An indicating device for indicating the position of rotary adjustment of the type carrier is provided in a dial 71 (Figs. 2 and 8) having marked thereon a series of figures 72 corresponding to the series of words for expressing amounts represented by the types on the carrier. These figures, for the purpose of convenience and ease of reading, are preferably arranged on the dial in two rows, and the plate 66 previously referred to is provided with a pair of pointers 73 and 74, the pointer 73 being longer than the other so as to move over the outer row of figures, while the shorter pointer 74 moves over the inner row of figures. Plate 66 bearing against the dial, presses the latter against the casing with its edge fitting neatly within a circular recess 75 in the casing. Engaging means (not shown) are provided between the dial and casing for preventing the rotation of the dial when the knob 68 is rotated. Rotation of the knob in the direction shown by the arrow rotates plate 66 and thus moves the pointer 73 from the position shown in Fig. 8, successively, over the figures of the outer row and when this pointer passes over the last figure "12" at the left of this row, the pointer 74 moves over the figure "13" at the right of the inner row, and continued rotation of the knob moves the latter pointer over each of the figures of the inner row. A complete rotation of the knob rotates the type carrier to bring any desired type to printing position, as indicated by the registry of one of the pointers with the corresponding figure on the dial. The whole of the dial is visible at all times with all of the characters in upright position, and the carrier may be quickly rotated in either direction, as most convenient, to move the pointers from one desired figure to another to bring to printing position the characters intended to be impressed upon the work.

As shown in Fig. 8, the indicating dial is provided with figures from 1 to 19, and with figures for indicating the multiples of 10 from 20 to 90. Each of these figure expressions on the dial has a corresponding word expression for the same amount in the types on the carrier, the full amount desired to be written on the check being written out by the selective combination and impression of these words. The dial is also provided with the letter "C," indicating the word "hundred," with the letter "M," indicating "thousand," with the signs for "dollars" and "cents" indicating the corresponding words, and with a star representing any conventional character, which is impressed upon the paper at the beginning of each amount as a limiting mark to prevent the fraudulent prefixing of characters to alter the amount.

The means for effecting the printing rotation of the carrier and movement of the platen will now be described, and preferably comprises a short shaft 76 journaled at one end in the forward wall of the casing and at the other in a lug 77 depending from the top thereof. The forward end of this shaft projects beyond the front wall of the casing and has fixed thereon the operating crank 78 carrying a handle 79. Pinned on the shaft 76 is a sleeve 80 having fixed on the rear end thereof an arm 81 which has a forked lower end engaging in a slot 82 in a roller 83 rotatably supported by a pin 84 fixed at its ends in lugs on a pair of plates 85 and 86, these plates constituting a rocking frame mounted on a sleeve 87 on the shaft 43. Plate 85, best shown in Fig. 3, comprises in addition to the lug supporting the pin 84, a pair of oppositely extending arms 88 and 89, and also at its lower side a lug 90. Fixed at one end to this lug is a spring 91 having its other end attached to the lever 38 and serving to rotate plate 85 so as normally to maintain the operating crank 78 in raised or inactive position. Plate 86 is best shown in Fig. 11 and comprises besides the lug which supports the pin 84, an arm 92, in the end of which, and also in the corresponding arm 89 of the plate 85, is supported a pin 93, the rear end of which projects beyond the arm 92 and carries a pawl 94 urged by a spring 95 into engagement with the periphery of the disk 52, the periphery of the disk being provided with a series of recesses 96 with which the pawl is adapted to engage. When the plates 85 and 86 and the crank 78 are moved to inactive position by the spring 91, pawl 94 engages a pin 97 in the end of shaft 76 and is thereby raised out of engagement with the disk 52. When the crank handle 79, however, is depressed, and, by the mechanism described, rocks the plates 85 and 86 in a clockwise direction, as seen in Figs. 3, 5, and 11, pawl 94 moves into engagement with the disk 52 rotating the latter and thereby the type carrier, so as to roll the type previously

brought to printing position into printing contact with the work.

Pivoted on the outer end of arm 88 of plate 85 by means of a pin 88A is a pawl 98, urged by spring 99 into engagement with the periphery of a disk 100 rotatably supported on the shaft 43. This disk, like the disk 52, is provided with a series of ratchet like recesses or notches 101, with which pawl 98 is adapted to engage, thereby rotating disk 100 in a clockwise direction, as seen in Figs. 3 and 11 where the disk is shown as broken away to expose parts in the rear.

Bearing resiliently upon the periphery of this disk is also the arm 38 previously described. The notches 101 are so arranged and shaped that the pawl 98, in its lower normal position, engages in one of these notches as does also the lever 38, so that in this position of the parts the platen is retracted to inactive position. When the pawl 98 is raised by the rocking of arm 88 it rotates disk 100 so that lever 38 is raised out of a recess and up on the periphery of the disk, thereby raising the platen to printing position. When pawl 98 reaches the end of its stroke, lever 38 drops into the next recess, lowering the platen and holding the disk 100 while the pawl returns to normal starting position.

The operating parts described, as will now be understood, are so arranged that when the knob 68 is turned to select the type, this selected type is thereby brought with its forward end adjacent the platen 25. Depression of the operating crank handle 79 then rocks the shaft 76, and by means of the arm 81 rocks the frame comprising the plates 85 and 86, by which movement the pawl 94 rotates the disk 52 and thereby the type carrier to roll the selected type over the platen.

This same rocking movement causes the pawl 98 to turn the disk 100 one division, thereby acting through the lever 38 to raise the platen in a position to engage the advancing end of the selected type form. The return rocking movement of the shaft 76 restores the frame comprising the plates 85 and 86 to the position shown in Fig. 3 ready for the next operation. The work is raised by the platen through a slot in a guard plate 102 attached to the casing above the work slot and extending below the type carrier to prevent smearing of the work with ink from the type. As the type is rotated over the platen these parts engage and print the work by a rolling contact which serves, simultaneously, to feed the work over the printing bed. Each type, as stated above, forms one of a row having their terminations in alinement axially of the carrier, and the recesses in the disk 100 are so spaced that as the line of terminations of each row of type passes across the platen, the platen lever drops into the next recess and withdraws the platen, thereby precisely terminating the feeding movement of the work. It is preferable to raise and lower the platen in this manner during the printing operation for the reason that the feeding movement imparted to the work may become excessive due to the inertia of the work and the coaction of the printing surfaces, and by arranging the types in the manner indicated and dropping the platen, any excessive feeding movement is prevented. The withdrawal of the platen in this manner is also convenient, of course, when inserting the work in and removing it from the machine. When the operating handle 79 is released the parts return to the position shown in Figs. 3 and 11, by reference to which it will be seen that the pawl 94 is preferably raised by engagement with the pin 97 out of contact with the disk 52, pawl 98 on the contrary remaining in engagement with the recess in the disk 100. It will therefore be seen that upon the initial movement of the operating crank the disk 100 is immediately rotated to raise the platen while disk 52, owing to the lost motion of the pawl 94, is not rotated until a little later, so that the platen has time to raise the work to contacting position before the selected type form is rotated. Upon release of the operating crank, pawl 94 by its engagement with the disk 52 preferably carries the latter and the type carrier back to starting position, so that the indicating pointer 73 or 74 is returned to registry with the type character of the type previously printed.

If so desired the printing surfaces of the type and platen may be formed with corrugations adapted to register and mesh with each other during the printing impression, for the purpose of disrupting the paper at the same time that the ink is applied, in order that the paper may absorb and become thoroughly impregnated with the printing ink. One variety of such corrugations is indicated in the drawing in Figs. 4 and 6, but, of course, these corrugations may be formed in various ways, as explained in U. S. Letters Patent No. 1,138,330, granted to Todd and Tiefel, May 4, 1915, for check writers, so that further description herein is unnecessary.

It is apparent that in order to print a legend satisfactorily in words, there must be spacing between the words. This is effected by maintaining engagement between the platen 25 and the type form long enough for the last type of the word to carry the work far enough for the succeeding word to be suitably spaced from the word last printed. The mechanism, best shown in Fig. 10 and previously referred to in a general way, is to regulate this word spacing so that the words will be separated a distance making the legend readable but still not far enough

to permit the insertion of an additional character. By turning the screws 57 (Fig. 10) coöperating with the shoulder or lug 58 rigid with the platen operating cam disk 52, the cam disk may be shifted slightly in either direction with reference to the type carrier, the type carrier, it will be recalled, being driven through the connection afforded by the pin 49 carried by the member 54. By adjustment of the screws 57 and consequent change in the setting of the cam disk 52, the time at which the platen will be dropped out of engagement with the type form may be changed. If the adjustment is correctly set the platen will be held up long enough for the grooved type to coöperate with the platen to carry the work a spacing distance before the platen is dropped.

The means of inking the types comprises a pair of similar devices shown in Figs. 3, 5 and 7. Each of these devices comprises a cover plate 103 pivoted at 104 near its lower edge to the wall of the casing, the latter being provided with an opening slightly larger that the cover plate which may be swung outwardly on its pivot but is prevented from passing inwardly through the said opening by a projecting finger piece 105. The cover plate is provided with a pair of lugs 106 in which is mounted a spindle 107 having journaled thereon a frame 108. The latter has a pair of inwardly projecting arms 109 provided with open bearing slots 110 in which is journaled a spindle 111 rotatably supporting an ink roll 112. A spring 113 on the spindle 107 engages the frame 108 and urges the latter inwardly so as to press the inking roll against the type. Referring to Fig. 7 it is seen that spindle 111 is of such length that the inking roll which is rotatably and slidably mounted thereon and is equal in length to the width of the type carrier, may be moved axially of the spindle a distance equal to the total axial travel of the type carrier. When the carrier is rotated and moved axially on its support, the engagement of the types with the inking roll rotates the latter and also moves it axially of its spindle, so that the inking roll is maintained in registry with the face of the type carrier to whatever position the latter is moved.

A full stroke mechanism is provided for the operating crank comprising arm 122 (Figs. 4 and 12) fixed to the shaft 76 and extending downwardly therefrom in the form of a sector, having its arcuate end provided with teeth 123. Coöperating with these teeth is a spur 124 on a yoke 125 rotatably carried on the shaft 43, this yoke being normally held with its spur vertical by means of a spring 126 attached to the yoke and to the casing. These parts are so arranged that when depression of the operating crank is begun the sector arm 122 swings over the yoke 125 so that the teeth of the sector engage the spur 124, rocking the latter in the direction of movement of the sector so that while the movement of the sector in this direction may be continued to complete the printing impression, the spur and teeth 123 will lock with each other if it is attempted to reverse the movement of the sector, until all of the teeth have passed out of contact with the spur. The movement of the operating crank may then be reversed as a reversal of the movement of the sector arm will bring the end of its toothed surface into engagement with the spur 124 and rock yoke 125 in the opposite direction to permit the reverse movement of the sector arm, but, again the latter movement of the sector arm must be continued until its teeth pass out of contact with the spur before the sector arm or the operating crank may be again moved in the first direction. By this means, the type having been selected and the impression thereof begun, it is impossible to discontinue the printing operation of the machine until the type has been fully impressed upon the work and a complete word printed, thus preventing the partial impression only of a part of a word, or leaving the platen and type in engagement with the work so as to tear the latter upon attempted removal from the machine, or the feeding of the work without making an impression so as to form a blank interval in the inscription.

A pressure foot is provided for preventing inadvertent movement of the work on the printing bed during the printing operation and for restraining the feeding movement of the work, comprising a roller 114 (Figs. 3 and 9) on a spindle 115 journaled in the forked ends of a lever 116 which is rotatably supported on the shaft 30 between the branched arms 28 of the platen arm. Lever 116 extending beyond the shaft 30 has a slotted end 117 engaging an angular rod 118 journaled on the pin 119 fixed in the casing. One end of the rod 118 extends through and above the base portion of the casing and is provided with the finger piece 121 serving to rock rod 118 and the lever 116, and lowering the presser foot 114. Spring 120 serves normally to hold the finger piece or button 121 in raised position, and the presser foot 114 bearing upwardly against the guard plate 102 so that the work is normally pressed by the presser foot against the guard plate and frictionally restrained against movement, the manipulation of button 121 serving to withdraw the presser foot to permit the insertion and removal of work from the machine.

The constructions and functions of the various parts of the machine having been indicated, it only remains to point out gen-

erally the manner in which the machine and the work are manipulated. Button 121 having been depressed to retract the presser foot, the work is inserted in the slot 22 at the rear side of the machine, so that the blank space on the work desired to be printed is located above the platen, the position of which is indicated by a mark (not shown) on the outer edge of the printing bed. The presser foot is then released to engage the work and the setting knob 68 is rotated to bring the pointer 73 into registry with the star or initial limiting character shown on the dial. The operating handle 79 is then depressed and released, the work being printed with the character indicated and correspondingly fed over the printing bed. Knob 68 is then successively rotated to bring the appropriate pointers into registry with the characters on the dial corresponding to the various words required to form in combination the inscription intended to be printed on the work. After each setting of the type carrier the operating crank is actuated to print and simultaneously feed the corresponding character, the various types being thus selectively, successively, and individually brought to printing position and impressed upon the work to form the complete inscription, after which the presser foot is retracted and the work withdrawn from the machine. The types are compactly arranged on the carrier so that use is made of substantially the entire peripheral surface of the latter, and this compact arrangement of the types makes it possible to bring any desired type to the common printing position adjacent the platen with but a small bodily displacement of the carrier, so that the machine may be quite small in size. Furthermore, the operating parts for setting the type carrier and for effecting the printing movement of the latter and of the platen are simple, compact, durable in construction, and unlikely to get out of order. The dial is so placed as to face the operator squarely, while all of the characters thereon are visible at all times, thus facilitating selective setting of the type carrier, and the operating crank is conveniently located at the front of the machine, these various features combining to afford an efficient and convenient machine.

What is claimed is:

1. In a printing machine, a type carrier having a plurality of circumferentially extending types and mounted for rotation about a single axis to effect both type selection and printing, means comprising indicating devices for effecting the type selecting rotation of the carrier, devices for effecting the printing rotations of the type carrier, and a platen connected for operation by the devices for effecting the printing rotations of the type carrier.

2. The combination of a type carrier mounted for rotation in either direction about a single axis and having a plurality of circumferentially extending types adapted to be individually and selectively impressed upon the work; a platen for coöperation with said types; and means for selecting a type and for impressing it upon the work by the rotation of said type carrier about said axis.

3. The combination of a type carrier mounted for rotation about a single axis and having a plurality of types adapted to be selectively impressed upon the work; a platen for coöperation with said types; and separate means for selecting a type by rotary movement of the carrier in either direction about said axis and for impressing it upon the work by a subsequent rotary movement of said carrier about said axis.

4. The combination of a rotary type carrier having a plurality of word type forms extending at an angle to the axis of the carrier and adapted for individual and successive impression upon the work, said carrier being rotatable in either direction about said axis to bring said types, selectively, to printing position; a platen for coöperation with said types; and means for effecting a rolling contact between the selected types and the platen to print the work.

5. The combination of a rotatable type carrier having a plurality of type forms extending at an angle to the axis of the carrier, said carrier being rotatable in either direction about said axis to bring said types, selectively, to printing position; a rotary platen for coöperation with said types; and means for moving said carrier to bring the selected types into rolling contact with the platen to print and feed the work.

6. The combination of a type carrier having a plurality of types arranged at an angle to the axis of the carrier, said carrier being rotatable in either direction about said axis to bring said types, selectively, to printing position; a rotary platen for coöperation with said types; and means for rotating said carrier about the aforesaid axis to bring the selected types into rolling contact with the platen to print and feed the work.

7. The combination of a type carrier having a plurality of types arranged in a continuous row extending in the reading direction of said types, said carrier being rotatable in either direction to bring the types, selectively, to printing position; a platen for coöperation with said types; and means for effecting a rolling contact between the selected types and platen to print the work.

8. The combination of a type carrier having a plurality of types arranged in a continuous row extending in the reading direction of said types, said carrier being rotatable in either direction to bring the types,

selectively, to printing position; a rotary platen for coöperation with said types; and means for rotating the carrier to bring the selected types and platen into contact to print and feed the work.

9. The combination of a type carrier having a plurality of types arranged in a spiral row, said carrier being rotatable in either direction about the axis of the spiral to bring said types individually and selectively to printing position; a platen for coöperation with said types; means including an indicator for rotating the type carrier to effect type selection; and means for effecting a rolling contact between the selected types and platen to print the work.

10. The combination of a type carrier having a plurality of types arranged in a spiral row, said carrier being rotatable in either direction about the axis of the spiral to bring said types individually and selectively to printing position; a rotary platen for cooperation with said types; means including an indicator for rotating the type carrier to effect selection of the type; and means for rotating the carrier and platen to bring the selected types and platen into rolling printing engagement with the work.

11. The combination of a type carrier having a plurality of types arranged in a spiral row, said carrier being rotatable in either direction about the axis of the spiral to bring said types individually and selectively to printing position; means including an indicator for rotating the type carrier to effect selection of the type; a rotary platen for cooperation with said types; and means for effecting a rolling contact along the path of said spiral between the platen and the selected type to impress the latter upon the work.

12. The combination of a type carrier having a plurality of types arranged in a spiral row, said carrier being rotatable in either direction about the axis of the spiral to bring said types individually and selectively to printing position; means including an indicator for rotating the type carrier to effect selection of the type; a rotary platen for cooperation with said types; and means for rotating the carrier and platen and moving one of them parallel with the axis of the spiral to effect a rolling contact between the platen and the selected type along the path of said spiral to print and feed the work.

13. The combination of a rotary type carrier having a plurality of types arranged in a row extending obliquely to the axis of the carrier; a rotary platen for coöperation with the types; selective means for effecting a rotation of the carrier and a relative movement of the carrier and platen parallel with the axis of the carrier for bringing any one of said types directly to position for coöperation with the platen; and means for effecting a rolling engagement between the selected type and platen to print and feed the work.

14. The combination of a type carrier having a plurality of types arranged in a spiral row; a rotary platen for coöperation with said types; selective means for rotating said carrier and moving the same along the axis of the spiral to bring any one of said types directly to position for coöperation with the platen; and means for rotating the carrier and platen to bring the selected type and the platen into rolling printing engagement with the work.

15. The combination of a rotary type carrier having a plurality of types arranged in a row extending obliquely to the axis of the carrier; a rotary platen for coöperation with the types; selective means for effecting rotation of the carrier and relative movement of the carrier and platen parallel with the axis of the carrier for bringing any one of said types directly to position for coöperation with the platen; and means for effecting a rolling printing contact between the selected type and platen operating to move the platen to position for contact with the type and to return the platen to inactive position as it passes out of contact with the type.

16. The combination of a rotary type carrier having a plurality of types arranged in a row extending obliquely to the axis of the carrier, said carrier being rotatable and axially movable to bring the types, selectively, to printing position; a rotary platen for coöperation with the types; means formed on the surfaces of the types and platen to coöperate during the printing impression to engage and disrupt the paper and to feed it a distance equal to the length of the type plus a small spacing distance at the end of each word; and means for effecting a rolling printing engagement of the selected types and platen, operating to move the platen to position for contact with the type, and to return the platen to inactive position as it passes out of contact with the type.

17. The combination of a type carrier having a plurality of circumferentially extending types adapted to be selected for impression upon the work by the rotation of the carrier in its circumferential direction; a rotary platen for coöperation with the types; means formed on the surfaces of the types and platen for engaging and embossing the paper, adapted to coöperate during the printing impression to feed the work a distance equal to the length of the type plus a small spacing distance at the end of each word; and means for effecting a rolling printing contact between the selected types and the platen.

18. The combination of a type carrier

having a plurality of circumferentially extending types adapted to be selected for impression upon the work by the rotation of the carrier in a circumferential direction; a rotary platen for coöperation with the types; and means for effecting a rolling printing contact between the selected type and platen, operating to move the platen to active position for engagement with the type and to return the platen to inactive position as the latter and the type pass out of contact.

19. The combination of a type carrier having a plurality of types arranged in circumferentially and axially extending rows; a rotary platen; means for selecting any of said types for individual coöperation with the platen by the rotation of said carrier; and means for effecting a rolling contact between the selected type and platen to print and feed the work.

20. The combination of a type carrier having a plurality of types arranged in circumferentially and axially extending rows, the types in said axially extending rows having their terminations in alinement axially of the carrier; a rotary platen; means for selecting any type for individual cooperation with the platen by the rotation of the carrier; and means for effecting a rolling printing contact between the selected type and platen, operating to move the platen to position for contact with the selected type, and for returning the platen to inactive position as the line of terminations of the corresponding axial row of types passes the platen.

21. The combination of a rotary type carrier having a plurality of types arranged in a row extending obliquely to the axis of the carrier; a platen for coöperation with the types; selective means for bringing any one of said types directly to printing position by the rotation of said carrier; means for effecting a rolling contact between the selected type and platen to print and feed the work; and means for restraining the movement of the work.

22. The combination of a rotary type carrier having a plurality of types arranged in a row extending obliquely to the axis of the carrier; a platen for coöperation with the types; selective means for bringing any one of said types directly to printing position by the rotation of said carrier; means for effecting a rolling contact between the selected type and platen to print and feed the work; and a presser foot movable into and out of engagement with the work to permit insertion and removal of the work and to restrain movement of the latter while in the machine.

23. The combination of a rotary type carrier having a plurality of types arranged in a row extending obliquely to the axis of the carrier; means actuated by rotary movement of the carrier for imparting axial movement thereto; and a member connected with the carrier and adapted to be freely rotated in either direction to rotate the carrier selectively and bring any of said types directly to printing position.

24. The combination of a rotary type carrier having a plurality of types arranged in a row extending obliquely to the axis of the carrier; a stationary part; means comprising a cam and follower coöperating with said stationary part and actuated by rotary movement of the carrier, for imparting axial movement to the latter; and a member having a driving connection with the carrier and adapted to be freely rotated in either direction to rotate the carrier and bring any of said types directly to printing position.

25. The combination of a rotary type carrier having a plurality of spirally arranged types; a stationary part; a threaded portion carried by said stationary part and a coöperating nut on the carrier for imparting axial movement to the latter during rotation thereof; and a member having a sliding connection with the carrier and adapted to be freely rotated in either direction to rotate the carrier selectively and bring any of its types directly to a common printing position.

26. The combination of a rotary type carrier having a plurality of types arranged in a spiral row; a platen for coöperation with said types; means for moving said carrier axially during rotation thereof to maintain said spiral row in registry with the platen; means for rotating said carrier in either direction to bring any of said types to printing position; and means for effecting a printing engagement between the selected type and platen.

27. The combination of a rotary type carrier having a plurality of types arranged in a spiral row; a platen for coöperation with said types; means for moving said carrier axially during rotation thereof to maintain said spiral row in registry with the platen; means for rotating said carrier in either direction to bring any of said types to printing position, comprising a rotary member, and a sliding connection between said member and carrier; and means for effecting a printing engagement between the selected type and platen.

28. The combination of a type carrier having a plurality of circumferentially extending types, said carrier being manually rotatable to bring said types selectively to a common printing position; a rotary platen; and a pawl and ratchet device for rotating the carrier in a constant direction to bring the selected type into rolling engagement with the work to print and feed the work.

29. The combination of a type carrier having a plurality of circumferentially extending types, said carrier being rotatable to bring said types selectively to a common printing position; a rotary platen; an operating member; a pawl and ratchet and connections whereby said pawl and ratchet serve upon actuation of the operating member to rotate the carrier and bring the selected type into rolling engagement with the work, to print and feed the work.

30. The combination of a type carrier having a plurality of circumferentially extending types, said carrier being rotatable to bring said types selectively to a common printing position; a rotary platen; operating means for rotating the carrier to bring the selected type into rolling printing engagement with the work; and means actuated by said operating means for moving the platen to position to coöperate with the selected type, and for returning the platen to inoperative position.

31. The combination of a rotary type carrier having a plurality of types arranged in a plurality of rows extending axially of the carrier with the terminations of the types of each row in alinement axially of the carrier, said carrier being rotatable to bring said types selectively to a common printing position; a rotary platen; operating means for rotating the carrier and moving the selected type with its corresponding row past the platen; and means, actuated by said operating means for moving the platen to position for rolling printing contact with the selected type and for returning the platen to inoperative position as the line of termination of said corresponding row of types passes the platen.

32. The combination of a type carrier having a plurality of circumferentially extending types, said carrier being rotatable to bring the types selectively to printing position; a rotary platen; operating means comprising a pawl and ratchet device for rotating the carrier to effect a printing movement of the selected type past the platen and a second pawl and ratchet device for moving the platen to position for rolling printing engagement with the work and for returning the platen to inactive position as the end of the type leaves the platen.

33. The combination of a type carrier having a plurality of circumferentially extending types, said carrier being rotatable around its axis to bring the types selectively to printing position; a rotary platen; operating means for rotating the carrier on its axis to move the selected type into engagement with the work; a cam and follower for actuating the platen; and a pawl and ratchet device actuated by said operating means to rotate said cam and move said platen to and from operative position.

34. The combination of a type carrier having a plurality of circumferentially extending types, said carrier being rotatable on its axis to bring the types selectively to printing position; a rotary platen; a rocking frame; means connecting said frame and carrier for rotating the carrier on its axis by the rocking frame to move the selected type into printing contact with the work; and a connection between said rocking frame and the platen for moving the latter to work engaging position and for returning the platen to inactive position as the termination of the selected type passes out of printing engagement with the platen.

35. The combination of a type carrier having a plurality of circumferentially extending types, said carrier being rotatable to bring the types selectively to printing position; a rotary platen; means for rotating the carrier to bring the selected type into rolling contact with the work; and means for moving the platen to work engaging position, and for withdrawing it from such position as the selected type and platen pass out of contact, one of said means being adjustable in order to time the relative movements of said carrier and platen.

36. The combination of a type carrier having a plurality of types; a platen; means for moving said carrier simultaneously in two directions to bring the types selectively to position for coöperation with the platen; and an inking element adapted to be moved simultaneously in two directions by said movement of the carrier and thereby maintained in position for inking contact with said types.

37. The combination of a type carrier having a plurality of types; a platen; means for moving said carrier simultaneously in two directions to bring the types selectively to position for coöperation with the platen; and an inking roll for said types adapted to be rotated by contact therewith and to be moved along its axis and thereby maintained in position for inking contact with said types.

38. The combination of a rotary type carrier having a plurality of types of varying lengths arranged in a row extending obliquely to the axis of the carrier; a platen; means for rotating the carrier and for moving it axially to bring the types, selectively, to position for coöperation with the platen; and separate means for effecting an impression of the selected type upon the work and for feeding the work a distance equal to the length of the type plus an additional distance to provide a space between adjacent words.

39. The combination of a type carrier having a plurality of types of various lengths arranged in a spiral row; a platen; means for rotating the carrier in either di-

rection and moving it along its axis to bring any one of said types, selectively to position for coöperation with the platen: and means for effecting an impression of the selected type upon the work and for feeding the work a distance equal to the length of the type plus an additional distance to form a space between adjacent words.

40. In a machine of the class described, the combination with a rotary type carrier having a plurality of types of different lengths arranged in a row extending spirally around the carrier, a platen wide enough to coöperate with a single type form at a time, manually operable means for setting the type carrier to position any desired word form in operative relation to the platen, an indicator to guide the operator in setting the type carrier, a second manually operable device, and connections whereby the operation of said second device will cause a rolling engagement of the type and platen.

41. In a machine of the class described, the combination with a type carrier having a plurality of type forms arranged in a spiral around its circumference, of a platen, manipulative means for setting the type carrier to position any desired type form in operative relation to the platen, a manually operable mechanism for imparting a second movement to the type carrier, and connections whereby operation of said mechanism effects movement of the platen into engagement of the type.

42. In a machine of the class described, the combination with a type carrier having a plurality of type forms arranged in a spiral around its circumference, of a platen, means for moving the type carrier circumferentially and axially to bring any desired type form in position to coöperate with the platen, an operating member, a normally ineffective ratchet and pawl mechanism for rotating the type form against the platen, and connections whereby movement of the operating member renders the ratchet and pawl effective.

43. In a machine of the class described, the combination with a type carrier having a plurality of type forms arranged in a spiral around its circumference, of a platen, means for simultaneously moving the type carrier circumferentially and axially to bring any desired type form in position to coöperate with the platen, an operating member, means actuated by said member for raising the platen into position to cooperate with the type, a normally ineffective ratchet and pawl mechanism for rotating the selected type form against the platen, and connections whereby movement of the operating member renders the ratchet and pawl effective.

44. In a printing machine, a rotary platen normally out of printing position, a rotary type carrier provided with word type forms extending around the periphery of the carrier, means for rotating the carrier in either direction to position any desired type form with one end thereof adjacent the platen, an operating handle, means actuated by said handle for rotating the type carrier in one of the aforesaid directions to carry the letters of the positioned type form successively over the platen, and devices actuated by said handle for bringing the platen to printing position near the beginning of the printing rotation of the type carrier.

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Witnesses:
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