No. 815,124. PATENTED MAR. 13, 1906.

L. K. SCOTFORD.

NUMBERING MACHINE.

APPLICATION FILED JULY 31, 1905.

5 SHEETS—SHEET 1.

Fig. 1.

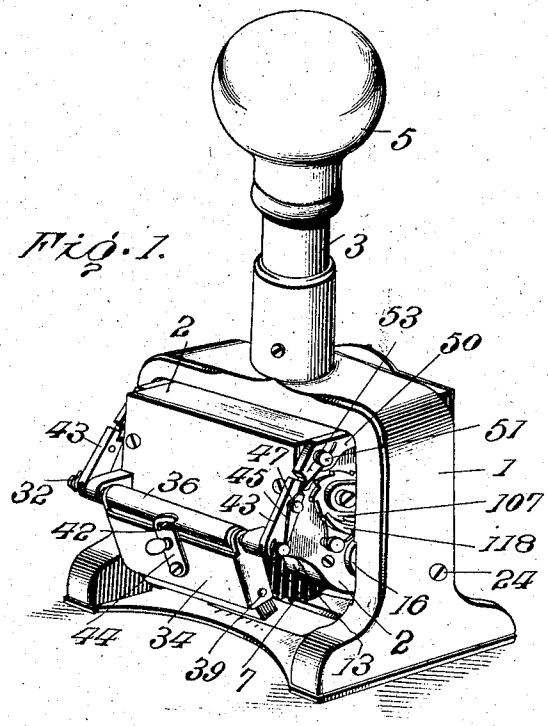
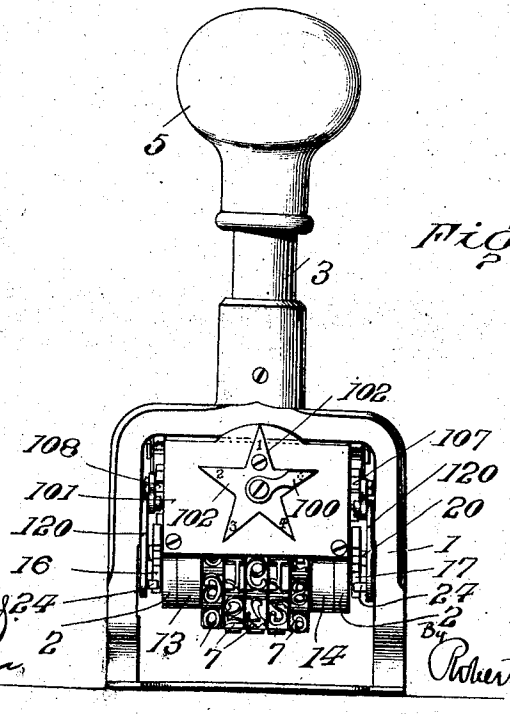


Fig. 2.



Witnesses

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5 SHEETS—SHEET 2.

Fig. 3.

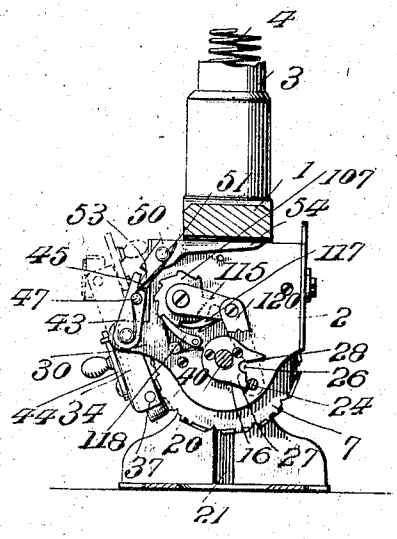
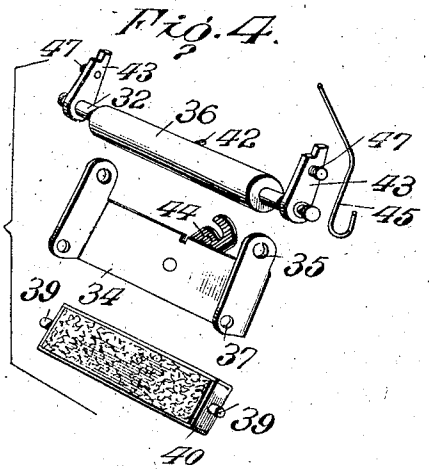


Fig. 4.



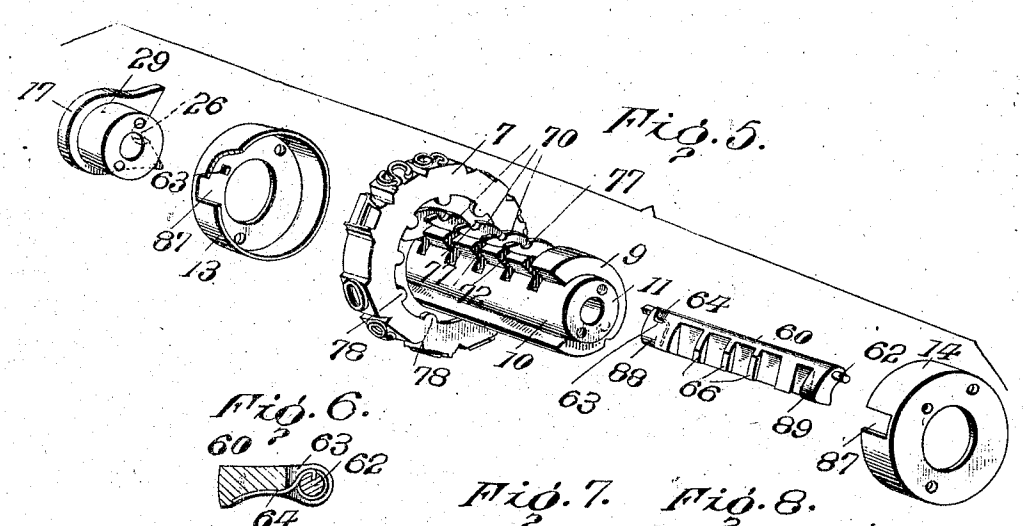


Fig. 5.

Fig. 6.

Fig. 7.

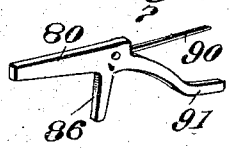
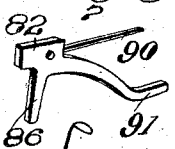


Fig. 8.



Witnesses

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5 SHEETS—SHEET 3.

Fig. 9.

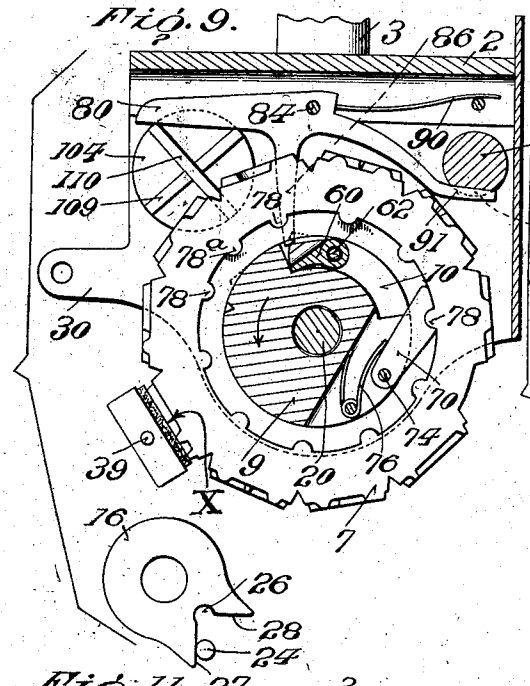


Fig. 10.

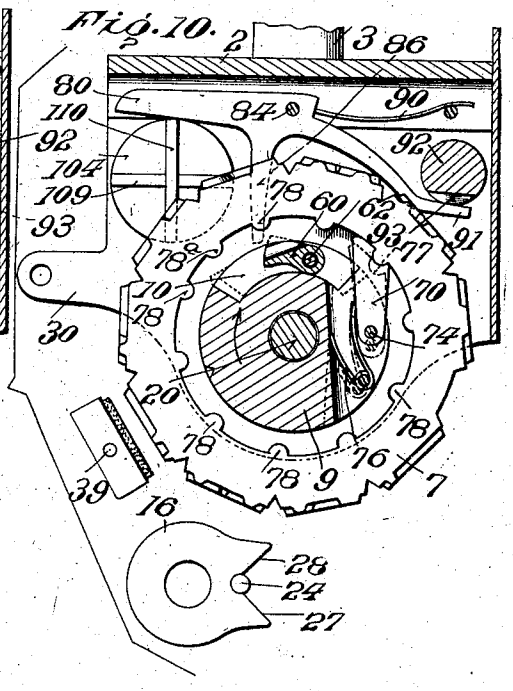


Fig. 11.

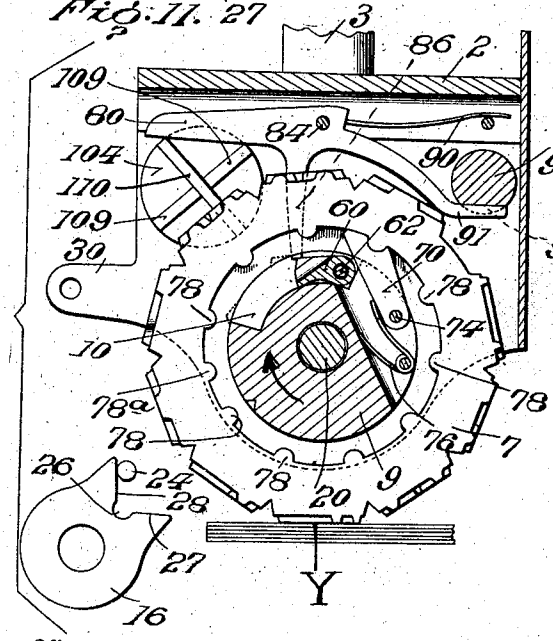
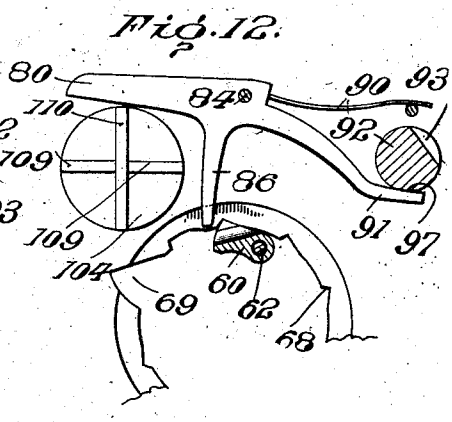


Fig. 12.



Witnesses

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5 SHEETS—SHEET 4.

Fig. 13.

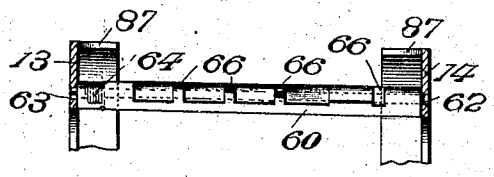


Fig. 14.

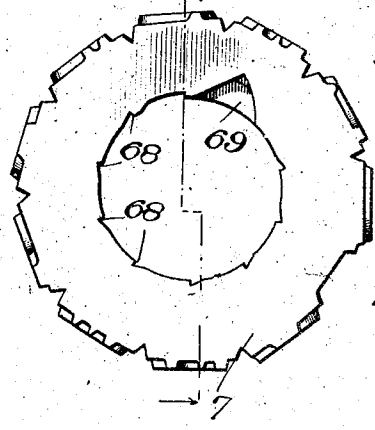


Fig. 15.

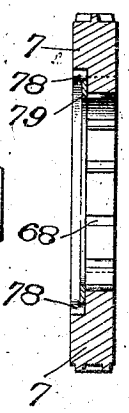


Fig. 16.

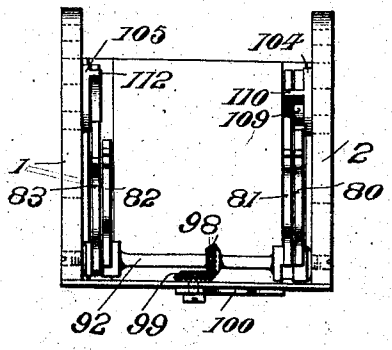


Fig. 17.

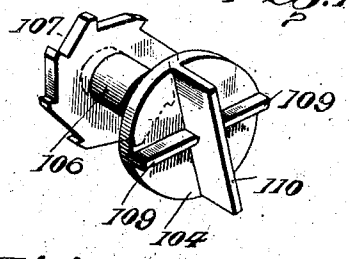


Fig. 18.

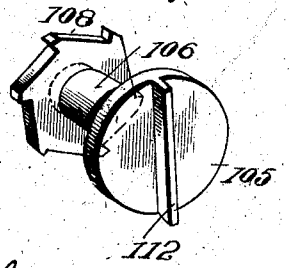
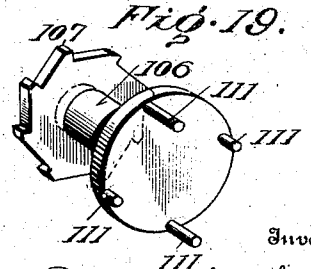


Fig. 19.



Witnesses

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NUMBERING MACHINE.

APPLICATION FILED JULY 31, 1905.

5 SHEETS—SHEET 5.

Fig. 20.

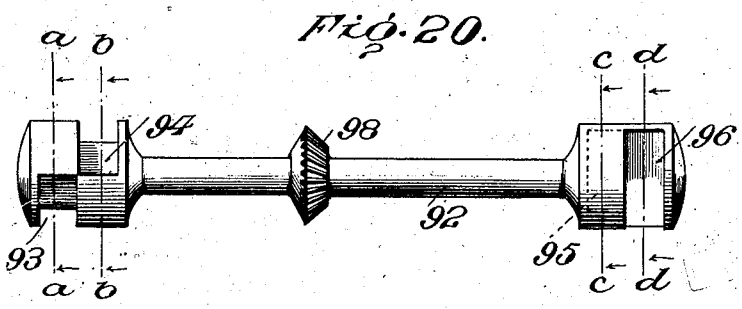


Fig. 21. Fig. 22. Fig. 23. Fig. 24.

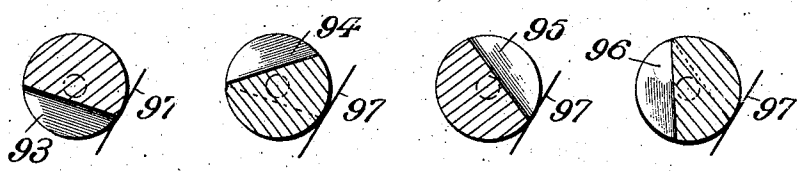
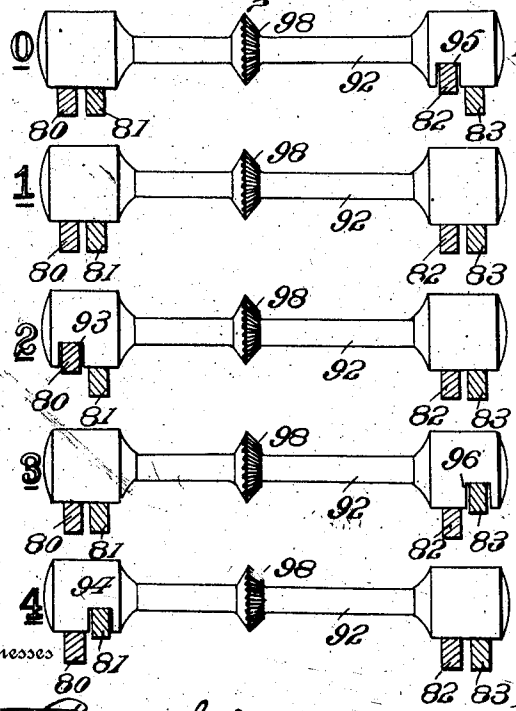


Fig. 25.



REPEATS SAME NUMBER INDEFINITELY.

CONSECUTIVE, OR CHANGES EACH TIME.

CHANGES EVERY OTHER TIME, OR PRINTS SAME NUMBER TWICE.

CHANGES EACH THIRD TIME, OR PRINTS SAME NUMBER 3 TIMES

CHANGES EACH FOURTH TIME, OR PRINTS SAME NUMBER 4 TIMES.

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UNITED STATES PATENT OFFICE.

LOUIS K. SCOTFORD, OF CHICAGO, ILLINOIS.

NUMBERING-MACHINE.

No. 815,124. Specification of Letters Patent. Patented March 13, 1906.

Application filed July 31, 1905. Serial No. 272,035.

To all whom it may concern:

Be it known that I, LOUIS K. SCOTFORD, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Numbering-Machines, of which the following is a specification.

This invention relates to that class of numbering-machines which are "automatic" in their action and which are usually made so that they may be "set" in order to permit an operator to print numbers successively or to "duplicate" the numbers before the machine automatically changes the units-wheel or to repeat by printing the same number over and over again. The machine which is shown in the drawings accompanying this application is also arranged so that it may be set to "triplicate" or print three numbers before automatically changing, or it may be set to quadruplicate or to print four numbers before changing. The machine is also capable of further enlargement in the direction just noted.

One of the objects of my invention is to provide a machine which is practically dust-proof, and to this end most of the parts are practically inclosed within what is almost a dust-proof case.

Another object of my invention is to provide a machine which may be set by the operator in the easiest manner and practically mechanically.

A further object is to so construct the machine that the operating-handle will be given a very slight movement, and therefore one in which the numbering-head is moved a short distance and the inking-pad is moved just sufficiently to clear the type on the numbering-wheels.

Further objects will be hereinafter noted.

With the aforesaid objects in view I may say, without in any way limiting myself to the particular machine illustrated in my drawings, that my invention consists in the numbering-machine the preferable embodiment of which is hereinafter described and then definitely set forth by the claims at the end hereof.

In the accompanying drawings, which form part of this application and which represent merely one of the ways of carrying out my invention, Figure 1 is a perspective view of my machine. Fig. 2 is a front elevation of the same. Fig. 3 is an end elevation with the handle broken away and with one of the sides also broken away. Fig. 4 is a perspective view of the inking device detached. Fig. 5 is a perspective view of the barrel, its detents, one of the numbering-wheels, the oscillating pawl-bar, and the heads, all detached in order to better show their construction. Fig. 6 is a sectional detail of one end of the pawl-bar. Figs. 7 and 8 are perspective views of two levers which coact with the pawl-bar. Fig. 9 is an enlarged sectional view between two of the numbering-wheels, the operating-cam being shown at one side and the parts being shown in the positions they normally occupy or when the handle is in its uppermost position. Fig. 10 is a similar view, but with the parts shown in the potions they occupy when the handle is pressed down part way. Fig. 11 is a similar view, but with the parts shown in the positions they occupy when the handle is pressed down into the printing position. Fig. 12 is a view of one of the levers held up by its controller-spindle. Fig. 13 is a sectional view of the two heads, showing the pawl-bar held in position. Figs. 14 and 15 are respectively side elevation and sectional views of one of the numbering-wheels. Fig. 16 is a bottom plan view of the machine with the barrel and its numbering-wheels entirely removed. Fig. 17 is a perspective view of a ratchet-wheel and connected member. Fig. 18 is a similar view or the similar parts on the opposite side of the machine. Fig. 19 is a modification of the device shown in Fig. 17. Fig. 20 is a side elevation of the spindle ror changing the positions of the levers. Fig. 21 is a section through line *a a* of Fig. 19. Fig. 22 is a section through the line *b b* of Fig. 19. Fig. 23 is a section through the line *c c* of Fig. 19. Fig. 24 is a section through the line *d d* of Fig. 19. Fig. 25 shows a series of diagrammatic views of the controlling-spindle and its levers, this figure showing the five different positions to be assumed by this controlling-spindle and said levers.

Referring now to the details of the drawings by numerals, 1 indicates the main frame, which may be made of the usual or any desired construction and in which operates the ordinary or any preferred style of wheel-frame or yoke 2, from which yoke projects the ordinary tubular spindle 3, in which is located the spring 4, operating within the handle 5 to cause the said handle, tubular spindle 3, and yoke 2 to be normally held in the position shown in Figs. 1 and 2, as is usual in this class of hand-stamps.

Nothing is claimed in the parts so far described, and therefore further description of the same is unnecessary except to state that they may be modified as occasion may require.

The aforesaid frame or yoke 2, as its name implies, carries a series of numbering-wheels 7, which are rotatably carried on a support or barrel 9. (Illustrated in perspective view in Fig. 5.) This barrel 9 has a longitudinal recess 10 for a purpose to be hereinafter described, and on its ends it is formed with bosses 11, forming journals which find bearings in two heads 13 and 14, the latter being rigidly held in position on the inner sides of the wheel-frame or yoke 2 by means of screws. It will be noted that while the heads are rigidly held in position and cannot move except as the wheel-frame or yoke 2 is reciprocated up and down the barrel 9 and its wheel 7 may be rotated, within certain limits to be described, on its journals 11 in the said heads 13 and 14. This limited rotation or oscillation of the barrel 9 in its bearings in the heads 13 and 14 is effected by means of two cams 16 and 17, located on the outsides of the wheel-frame or yoke 2 and which are provided with bosses extending through said yoke 2 and fixedly secured to the bosses 11 of the barrel 9. In order to give a steadying effect, a central spindle 20 passes through the barrel and its bosses and also through the cams and reciprocates vertically in two slots 21 in the sides of the main frame 1. Projecting from the sides of said main frame 1 are two screws 24, whose inner ends project in such relation to the cams 16 and 17 that when the handle 5 is depressed, carrying with it the yoke 2 and its numbering-wheels and cams 16 and 17, said cams are moved against the said fixed pins 24, so as to rotate the cams and the barrel connected thereto. In order to obtain the most desirable action, each of the cams 16 and 17 is provided with a central recess 26, which fits around its projecting screw 24 to turn the cam, and projecting from the recess 26 are teeth 27 and 28. The interior faces of these teeth are so located with respect to the fixed screws 24 and the recesses 26 of the cams that when the handle 5 is at its uppermost position, as shown in Fig. 9, the face of the tooth 27 is in a vertical position, while after the handle 5 has been depressed, so as to reverse the position of the cam, the face of the opposite tooth 28 is now in a vertical position, as indicated in Fig. 11. This makes it possible for me to insure an absolutely vertical movement of the numbering-head for the initial movement of its downward stroke and also for the final movement of its stroke, and thus at the moment when the numbering-wheels begin their downward movement they are not turned until the inking-pad is moved away from them, as will be hereinafter described, and likewise there will be an absolutely vertical movement at the moment the type-wheels are finishing their downward stroke to make their impression on the article being printed. I deem this of importance.

Each side of the wheel-frame or yoke 2 is provided with an extension 30, and a spindle 32 passes through these projections 30 and finds bearings therein. On this spindle 32 is swung an ink-pad carrier 34, whose ends pass over the spindle 32, a sleeve 36 preferably being employed to properly center the same. At the outer ends of the sides of the ink-pad carrier 34 are perforations 37, in which pass the trunnions 39 of the ink-pad 40. (See Fig. 4.) I desire to call particular attention to the fact that the journals 39 if this ink-pad project from the center thereof and that the ink-pad is supported by an ink-pad carrier, so that no matter whether the felt in the pad is thick or thin or thicker at one side than at the other the ink-pad will readily adjust itself to any such inequalities, owing to the fact that it is journaled in the center. I consider this of importance, as one of the troubles with the inking-pads now in use is that they are pivoted at one end, and therefore if the proper thickness of felt is not used or if the felt happens to be thicker at one edge than at the other it causes an uneven inking, and consequently a bad impression on the paper. The spindle 32 has a pin 42 projecting through the sleeve 36, and the ink-pad carrier 34 is provided with a pivoted latch 44, arranged to lock around the pin 42, so that when the latch 44 coacts with the pin 42 the ink-pad is compelled to move with the spindle 32 whenever the latter is rotated or rocked. In order to give this spindle 32 its rocking movement, I fixedly secure crank-arms 43 at opposite ends thereof and employ springs 45 to coact with the pins 47, projecting from the crank-arms 43, to normally move the upper end of said crank-arms inwardly, as indicated in Fig. 3, thus rocking the spindle 32 and moving the ink-pad carrier 34 and its pad 40 a slight distance away from the numbering-wheels 7. In order to give this pad-carrier its movement in the opposite direction, so as to throw the pad against the numbering-wheels to ink the same, I employ two levers 50, pivoted at 51 to the outer sides of the yoke 2, and the shorter end 53 of these levers coacts with the recessed end of each crank-arm 43, while the opposite end 54 projects under the horizontal member of the main frame 1. Thus when the handle 5 and its yoke 2 are pressed downward the spring 45 acts upon the pins 47 to throw the crank-arms 43 slightly inward, rocking the spindle 32 to move the ink-pad carrier and its pad away from the numbering-wheels, this action being permitted because the long arm 54 of the lever 50 is moved away from the horizontal member of the main

frame 1. However, when the handle is again allowed to move upward under the influence of its spring 4 as the long ends 54 of the levers 50 strike against the horizontal member of the main frame 1 the levers 50 are rocked on their pivots 51, and the crank-arms 43 are thus moved outward to rock the spindle 32 in the opposite direction to press the ink-pad against the numbering-wheels to ink them for the next impression. Another novel feature of the ink-pad device is that the pivoted latch 44 enables an operator to release the pad-carrier to move it independently of the spindle 32. In other words, if the latch 44 is disengaged from the pin 42 the pad-carrier 34, with its pad 40, may be swung around on the spindle 32, so as to assume the poistion shown in dotted lines in Fig. 3. I am thus enabled to throw the ink-pad carrier and its pad entirely away from the numbering-wheels in order that said numbering-wheels may be properly set and the pad inked without any necessity of first moving the numbering-wheels downward to project the pad away from said wheels.

From the foregoing it will be seen that I have devised an inking device with the following advantages: First, the pad has the slightest movement possible, only enough to clear it from the wheels; second, this movement is given in one direction by a spring, and in the other, when it must bear with great pressure against the wheels, the full force of the spring 4 is utilized to press the long levers 50 against the yoke 2; third, the pad-carrier is journaled so as to take up any inequalities, and, fourth, the ink-pad carrier can be thrown back.

I have hereinbefore referred to the fact that the barrel 9 has a longitudinal recess 10, and this recess permits a limited movement of the barrel on its trunnions 11. The length of this movement is determined by the dimensions of the said recess 10 and also by a pawl-bar 60, which is located in the position shown in Figs. 9 to 11. This pawl-bar is supported on a spindle 62, which passes entirely through the carrier and its free ends extend into the fixed heads 13 and 14, as illustrated in Figs. 5 and 13. One end of the spindle 62 is formed of rectangular shape and passes into a similarly-shaped opening 63 in the head 13, so that the spindle itself cannot rotate. A coiled spring 64 coacts with the spindle 62 and the pawl-bar 60, so as to normally hold said pawl-bar upward in the position shown in Fig. 10. Inasmuch as the heads 13 and 14 have no rotary movement, the pawl-bar 60 will also have no rotary movement, (except a slight oscillation to be described,) and therefore can have merely a vertical reciprocating movement, as the handle is moved up and down to reciprocate the yoke and all of its connected parts. It is therefore stationary except for its slight oscillation; but while this pawl-bar 60 has no rotary movement around the spindle 20 as a center it does have an oscillating movement on its own spindle 62, this movement being caused in one direction by the spring, as above stated, and in the opposite direction by means which will be described. The pawl-bar 60 is provided with a series of pawls 66, which are "stepped" in the usual manner—that is, each of them projects a little farther than the other progressively. These pawls are arranged to fit into the notches 68 in the interior of the numbering-wheel 7, and these notches are located in the usual positions—*i. e.*, there is one notch for each number on the wheel, or rather for nine numbers, a deep recess 69 being employed for the tenth number for the purpose of "carrying." In other words, the pawl for the units-wheel projects farther than all the other pawls, and hence said units-pawl prevents all the other pawls from engaging with their wheels, and therefore they are not moved. When, however, the said deep recess of the units-wheel comes opposite the units-pawl, which it does at every tenth revolution of the units-wheel, said pawl is not restricted by the shallow notch, but the deep recess permits it to be oscillated by its spring 64 until the second or tens pawl engages the notches in its wheel, and at the next rotation both the units and tens wheel are affected by the pawls. As soon as this next movement of the wheels takes place the deep recess 69 passes around, so that the pawl-bar is depressed again by the inner periphery of the units-wheel, and it then merely engages one of the shallow notches 68, and hence during the successive nine movements only the units-wheel is moved. In order to compel the numbering-wheels to move with the barrel 9 when the pawls are kept from engaging their recesses, I employ a series of detents 70, there being one detent for each wheel. These detents are located in recesses 72 in the barrel 9 and are supported on a common spindle 74 and are pressed outward against the interior surfaces of the wheels 7 by means of springs 76. The outer ends of these detents are provided with a notch or recess 77, and these notches or recesses are formed to engage with projections 78, formed on the numbering-wheels. The construction is such that when the barrel 9 (see Fig. 9, for example) is rotated in the direction of the arrow by the downward movement of the handle the detents 70, held against the wheels by the springs 76, lock the wheels to the barrel, and thus cause the wheels and the barrel to move together. When, however, the barrel is moved in the other direction, if the wheels are held in the manner hereinafter stated the springs 76 permit the wheels to move the detents 70 so as to shove the detents inward on the spindle 74, allowing the projections 78 to slip by the detents 70. For example, when the handle is moved downward from the po-

sition shown in Fig. 9 to the position shown in Fig. 11 the fixed pins 24, coacting with the cams 16 and 17, cause the barrel 9 to rotate in the direction shown by the arrow in Fig. 9. As will be seen in this figure, the pawl-bar 60 is held depressed out of contact with the notches 68 and the detents 70 engage the projections 78. Inasmuch as the detents 70 are rotated with the barrel 9 and as the detents are engaging the projections 78, holding the wheels to the barrel 9, the wheels are forced to rotate with said barrel. After the parts are moved down to the position shown in Fig. 11 on the upward movement the pins 24 cause the cams 16 and 17 to reverse the rotation of the drum 9, and hence the detents 70 move in the opposite direction with their barrel 9. If the pawl-bar 60 is held in the position shown in Fig. 11 out of the notches 68, when the barrel 9 and its detents 70 rotate in the direction shown in the arrow in said Fig. 11 the wheels are still caused to move with said barrel; but if the pawl-bar 60 is permitted to engage the notches 68, as in Fig. 10, the wheel 7 will be held by its pawl 66 from rotating in the direction shown by the arrow, and hence as the drum 9 and its detents 70 are rotated the springs 76 permit the detents to jump the projection 78, and the drum is thus rotated without rotating the wheel. It will thus be observed that whether or not the wheel is rotated depends upon the location of the pawl-bar 60. If said pawl-bar is thrown upward, so that any of the pawls 66 engage any of the wheels 7, said wheels will be prevented from moving in the direction shown by the arrow in Figs. 10 and 11; but when the pawl-bar is held in the position shown in Figs. 9 and 11 said wheels move in each direction, as the drum 9 is caused to move. Before describing the mechanism for controlling the position of the pawl-bar 60 I desire to direct attention to the fact that in the numbering-wheels between the notches 68 and recess 69 on one side of the wheels and the projections 78 on the other side I form the interior perfectly smooth, as seen at 79 in Fig. 15. This is for the purpose of preventing the wheel from dropping down when the deep notch 69 comes over the edges of the longitudinal recess 10. (Shown in Fig. 5.)

Pivoted to the sides of the wheel-frame or yoke 2 are a series of levers. These levers may be of any desired number, the number to be determined by the number of variations it is desired to make. In the machine illustrated in my drawings I have shown four levers 80, 81, 82, and 83, which are pivoted upon the pins 84. (Shown in Figs. 9 to 11.) Three of these levers (80, 81, and 83) are of the form shown in perspective view of Fig. 7, while the fourth (82) is of the form shown in Fig. 8. Each of the levers is provided with a finger 86, which projects downward, (see Figs. 9 to 11,) and these fingers enter through openings 87 in the heads 13 and 14, so as to coact with the ends 88 and 89 of the pawl-bar 60. A spring 90 is provided for each lever, which is arranged to normally hold said lever in the position shown in Figs 9 and 11, and when in this position the fingers 86 are in the proper location to be directly over the ends 88 and 89 of the pawl-carrier 60, and thus hold said pawl-bar in its lower position, so that the pawls 66 are out of contact with the wheels. One end 91 of each of the levers extends over to the right-hand side of the machine as viewed in Fig. 9 (see also Fig. 16) and is located under a controller-spindle 92. This spindle is of the novel character shown in Figs. 16 and 20 to 25 in that at each end there is an enlarged portion, and each of these enlarged portions is provided with two recesses having flat sides. The flat sides (numbered 93, 94, 95, and 96) correspond to the four levers 80, 81, 82, and 83, and these recesses are for the purpose of permitting the levers to be moved independently on their pivots 81. In other words, if we take, for example, lever 82 in diagram O of Fig. 25 it will be noticed that it fits within its recess 95 so that the spring 90 may hold it in this position with the finger 86 over the pawl-carrier to hold the latter down, Fig. 9. When, however, this controller-spindle 92 is rotated to the point shown in diagram 1 of Fig. 25, the flat side 95 is moved from under the end of lever 82, and thus said lever is moved so that its finger 86 will be thrown out of engagement with the pawls, and thus permit the latter to come in contact with the interior surfaces of the numbering-wheels. Further movement of the controller-spindle 92 affects the other levers, and in order that this spindle 92 may be properly rotated to so actuate any of the levers I form on or connect to it a bevel-gear 98, which meshes with a similar gear 99, screwed to a pointer or indicator 100, rotating on the face-plate 101, on which is impressed a dial 102, this dial consisting in the form shown of a five-pointed star, the five points being designated "0," "1," "2," "3," and "4." Thus as the pointer or indicator 100 is moved to the various points of the said star its bevel-gear 99 is similarly rotated to rotate the controller-spindle 92, and thus place it within the power of the operator to determine which of the flat sides shall be directly over any one of the levers 80, 81, 82, or 83. It may be best to here mention that these flat sides of the controller-spindle are arranged so that they coincide with the lines of a five-pointed star. Thus the flat side 93 is shown in sectional view in Fig. 21, while the flat side 94 is shown in sectional view in Fig. 22, and so on, so that there are four flat sides. As there are five lines forming a five-pointed star, one of these lines is missing from the controller-spindle, and this is for the purpose of having one part (designated

97 in Figs. 21 to 24) of the controller-spindle not cut away, so that all of the levers 80, 81, 82, and 83 may be held down at once. (See diagram 1 of Fig. 25.) The other ends of three of the levers 80, 81, and 83, Fig. 16, extend on the opposite side of the machine, and coacting with these levers are two controllers 104 and 105. These controllers have short projecting bosses 106, which rotate in openings in the sides of the wheel-frame or yoke 2, and on the opposite ends of these bosses are screwed two ratchet-wheels 107 and 108, the first of which has eight teeth and the other six teeth. Projecting from the controller 104 are ribs 109 and 110, forming at the periphery of the controller four projections, two of which project only one-half as far as the other two. (See Figs. 16 and 17.) In lieu of these ribs simple pins 111 may be employed, (see Fig. 18,) from which it will be seen that two of them project just half as far as the other two. The controller 105 on the opposite side of the machine has only one rib 112 projecting from it, forming at the periphery only two projecting portions. The purpose of these projecting portions will be described further on. In order to give these controllers rotary movement, I pivot to the center of each ratchet-wheel a short link 115, provided with a spring-actuated pawl 117, which engages the ratchet-wheel. On the side of the yoke 2 a second spring-actuated pawl 118 is employed to engage the ratchet-wheel and prevent backward rotation. Connected to the link 115 is a second link 120, which extends down and is pivoted to the fixed pin 24, projecting from the sides of the main frame 1. It will be understood that a ratchet-wheel and its two pawls, together with the two links 115 and 120, is provided on each side of the machine. It follows from the construction just described that whenever the numbering-head is depressed in the act of printing, owing to the fact that the ratchet-wheels and their pivots are moved downward, while the fixed pins 24 are not moved at all, the two links 115 and 120 are moved so as to carry the spring-pawl 117 back over the next tooth, so that on the upward movement of the numbering-head the reverse movement is given to the pawl 115, and hence the ratchet-wheels are rotated one notch or one "step." Inasmuch as one of the ratchet-wheels 108 has six teeth and the other, 107, eight teeth, it necessarily follows that it takes six reciprocations of the numbering-head to give a complete rotation to the ratchet 108 and its controller 105, while it takes eight reciprocations of the numbering-head to give a complete rotation to the ratchet-wheel 107 and its controller 104. By inspecting Figs. 9 to 11 it will be observed that the ends of the levers 80, 81, and 82 are above the projections on the controllers 104 and 105. In these figures only one of the controllers is shown, and remembering that there are two levers on each side of the machine (see Fig. 16) it will be seen that each time the controller is operated one notch or one step a different part of the controller is presented to the levers. Thus as it takes eight reciprocations to rotate the controller 104 eight different portions of the controller are presented to its levers at each complete revolution of the controller. If the controller-spindle 92 is so located that its appropriate lever may enter one of its flattened sides, as indicated in Fig. 11, the opposite end of the lever is allowed to fall downward onto its controller between two of its projections. However, the next reciprocation of the numbering-head causes the controller to move one notch, so that one of its projecting parts moves under the lever, and thus raises the lever to the position shown in Fig. 10. The third movement of the ratchet and its controller again permits the lever to fall to its downward position between two of the projections. During the eight movements necessary to complete the revolution lever 80, which is so located as to be struck by each of the four projections shown in Figs. 16 and 17, will be moved upward by these projections four times at each revolution and allowed to drop down four times when the spaces between the projections come under the levers; but the lever 81, which is alongside lever 80, is so located that it is only struck by the two longer projecting portions, (see Fig. 16,) and this lever is moved upward only twice in the eight steps by the complete revolution of the controller. In other words, the lever 80, which is moved by all four of the projections, moves up and down four times for each revolution or eight reciprocations of the numbering-head, while the companion lever 81, which is only actuated by the two projecting parts, is moved upward only twice during the complete revolution of the controller, or eight reciprocations of the numbering-head. When we look at the opposite side of the machine, Fig. 16, and realizing that this ratchet needs only six reciprocations of the operating-head to give it a complete revolution, and as there are only two projections on the controller, we will observe that its lever 83 is shoved upward twice during the six reciprocations of the operating-head necessary to rotate the controller. To go back now to Fig. 25, if we observe diagram 1 we will see that all four of the levers 80, 81, 82, and 83 are held down by the round side 97 of the controller-spindle. Thus the other ends of these levers are all held up out of contact with the controllers, Fig. 12, so that none of the fingers 86 are in a position to engage the pawl-bar 60. It therefore follows that this pawl-bar has its units-pawl in a position to always engage the interior surface of the units-wheel, and therefore at each reciprocation of the handle and its numbering-head

the units-pawl is permitted to engage one of the notches of the units-wheel, and as the barrel 9 is rotated, as hereinbefore described, the proper movement is given to the units-wheel at each reciprocation of the handle, and hence the machine is set so as to change the number each time, and therefore print successively or consecutively. When the operator desires to set the machine so as to "duplicate," or print the same number twice, before changing automatically, the indicator 100 is moved to the point of the star represented by the 2 in Fig. 2, so that the lever 80 is allowed to recede into its recess 93, (shown by the diagram 2 in Fig. 25.) This permits the finger 86 of lever 80 to move backward from the position shown in Fig. 10 to the position shown in Fig. 11, provided, of course, that the controller is in the position shown in Fig. 11. Now as the left-hand end of the lever 80 (shown in Fig. 11) is downward, as this lever is the one which engages all four of the projections from the controller 104, it follows that the lever is moved upward at every other reciprocation of the handle and its numbering-head, so that at one reciprocation the finger 86 may hold down the pawl-bar 60, (see Fig. 11,) while at the next reciprocation one of the projections of the controller moves the lever upward, so that its finger 86 cannot engage the pawl-bar 60, and thus permits the proper pawl to engage with the notch in the wheel to move the same, Fig. 10. Thus it will be seen that at every other reciprocation the finger 86 is moved away from the pawl-bar, so that the parts are "set" in such a way that the wheels can be changed once for each two reciprocations of the handle, or so that the same number is printed twice or "duplicated." If the operator desires to set the machine for quadruplicating, or for printing the same number four times, before changing automatically, the indicator is moved to the point numbered "4" on the star, so as to move the controller-spindle to the diagram 4 of Fig. 25. Now the lever 81, which it will be remembered is engaged by only the two projections of the controller 104 which project the farthest, Fig. 16, is moved by these projections only twice during the eight reciprocations necessary to completely rotate the controller 104. Thus during these eight reciprocations the same number is printed four times and then the controller moves the lever upward to permit the pawl to engage the wheel to move the wheel one notch, while at the next reciprocation the pawl is again held downward for the four reciprocations. When it is desired to print the same number three times, the indicator is moved to the point 3, so that all of the levers are held with their fingers away from the pawl-bar 60 except the lever 83, and as this lever coacts with the controller 105, which needs only six reciprocations of the handle to completely rotate it, and as there are only two projections on this controller, it follows that for these reciprocations the pawl-bar is held downward by the finger 86. Then the projection on the controller 105 moves the lever 80 upward to permit the pawl to engage the wheel to change it, and for three more reciprocations the lever is held over the pawl, so that the wheels do not change. I have referred to the fact that one of the levers (see Figs. 8 and 16) is different from the other three. This is for the reason that when the controller-spindle 92 is moved so that all the levers are held as designated in diagram O of Fig. 25 the lever 82 is not and cannot be acted upon by either of the controllers 104 and 105. When lever 82 is in the recess 95, the pawl-bar 60 is held down, and therefore none of the numbering-wheels is moved by action of the machine, but it prints the same numbers over and over again, or, as it is generally called, it is "repeating" the same number over and over again until the machine is set otherwise by the operation of the controlling-spindle.

In all numbering-machines with which I am familiar all the numbering-wheels with the exception of the units-wheel have no rotary movement on their axes except when they are carried every tenth, hundredth, thousandth, or ten-thousandth times by the carrying mechanism. In my machine, on the contrary, all the wheels have a partial rotary movement or oscillation on their axes in addition to the vertical reciprocation given by the depression of the operating-head. For example, when the handle is in the upper position the parts occupy the positions shown in Fig. 9, and when the handle is moved downward in the act of printing (all the detents 70 engaging the projections 78 of the wheels) as the downward movement rotates the barrel 9 and the detents all of said wheels are given a partial rotation or an oscillation on their axes from the inking position (X in Fig. 9) to the printing position, (Y in Fig. 11;) but after the impression is made and the yoke or wheel frame and all of its supported parts under the influence of the spring 4 are moved upward to the point where the fixed pins 24 again oscillate the cams 16 and 17 and their barrel 9, if the pawl-bar is held downward in the position shown in Figs. 9 and 11, as the barrel 9 and its detents 70 oscillate back to the position shown in Fig. 9 all of the wheels are again moved backward to the inking position. It will thus be seen that all of the wheels partially rotate in each direction. However, if the pawl is not held inward by the finger 86, but is permitted to be oscillated by its spring to the position shown in Fig. 12, so that it can engage the notches in the units-wheel, then as the barrel and its detent oscillate they will still move all the wheels until the first notch at the left-hand side of the pawl moves from

the position shown in Fig. 11 to the position shown in Fig. 10, when the units-wheel is engaged and detained by its pawl, its detent slipping over the projection. The units-wheel is therefore given no further rotary movement; but unless the pawl-carrier is opposite one of the deep recesses all the other pawls on the pawl-carrier are held out of the notches on the other wheels, and therefore all of the other wheels are moved from the position shown in Fig. 10 back to the position shown in Fig. 9. In other words, with the upward motion of the printing-head all the wheels oscillate from the printing toward the inking position and all the wheels except the units-wheel continue to rotate past the units-wheel until they reach the inking position. Thus the units-wheel advances only about half as far as the other wheels, which is just sufficient to move this units-wheel until the next higher figure reaches the inking position, although all the other wheels continue their movement completely back to the inking position. Thus if the wheels are arranged to print "44445" all of these wheels will be moved at the downward stroke from the inking position X in Fig. 9 until they reach the printing position Y in Fig. 11. The impression is then made. Then on the upward stroke, if the units-pawl is engaging the units-wheel which has just printed the number "5" of said numbers "44445," all of the wheels printing said numbers are rotated back until the notch in the units-wheel reaches the units-pawl. This wheel is thus held by the pawl, while all the other wheels continue to rotate back to the position shown in Fig. 9 until they reach the inking position. The amount of additional backward rotation given to the wheels which have just printed the first four figures of the number "44445" is the distance between two of the figures on the units-wheel, so that instead of all the wheels that printed the number "44445" being moved backward the same distance after the first four wheels (the ones printing the "4444") move away from the units-wheel which printed the "5" they move beyond the said units-wheel until they are on the same line with the next higher figure on said units-wheel, which is already in the inking position, and therefore at the next impression when all of the wheels again rotate together the machine will print "44446" instead of "44445."

I desire to call particular attention to the fact that the wheels 7 are all locked when in the printing position Y in Fig. 11. As there shown, the pawl-bar 60 holds the detents locked against the wheels, so that the latter cannot possibly rotate. I deem this of great importance, as when the wheels are locked, as shown in Fig. 11, they must print in exact alinement. Another peculiarity of the numbering-wheels not before described is that although there are only the usual ten numbers on each wheel there are eleven projections to be engaged by the detents. One of these is to correspond with the blank space between the number "1" and the cipher, this blank being clearly shown in Figs. 9 to 11. The extra projection is designated 78^a and is located midway between two of the other projections, so that there are three rather close together. This is for the purpose of permitting me to dispense with the use of any complicated "drop-cipher," and when the machine is set to commence printing with the unit "1" all of the wheels are engaged, so that these blank spaces are in line with each other, in which case the detent is engaging the extra projection 78^a. When in this position, the downward movement of the handle oscillates the wheels from the inking to the printing position, as usual; but after printing the rotation caused by the upward movement of the handle causes the detent to slip over the pin 78^a to the next pin 78, and the subsequent movements of the handle will move the numbering-wheel step by step, giving the wheel the same amount of rotation until the next time the large space would come to the printing position, and to turn this space past the printing position, so as to print the "1" instead of not printing at all, the detent now skips over the extra projection 78^a to the projection beyond it, thereby causing the "1" to print at the next reciprocation.

Although the operation of the various parts has been somewhat described in the description of these parts, it may be well to repeat the operation, which is as follows: Assuming that it is desired to "repeat" or print the same number over and over again, the indicator is moved to the point 0, which permits the lever 82 to move into its depression 95 in the controller-spindle, and therefore the spring 90 actuates the lever 82, holding the pawls down in the position shown in Figs. 10 and 11, so that the pawls cannot possibly engage the notches in the wheels. Hence when the handle is depressed to print and its cams 17 and 18 move against the pins 24 the cams and their barrel 9 and the detents all move, so that the wheels are moved from the inking position X in Fig. 9 to the printing position Y in Fig. 11, the detents forcibly moving the wheels with them. On the return stroke of the handle under the influence of its spring (the pawls still being held down) the detents carry all the wheels back to the inking position. Thus none of the wheels move independently of each other, but all move together in both directions. When, however, an operator desires to set the machine to print consecutively or successively, so as to print a different number on each article printed, the indicator is moved to the point marked "1." This moves the round surface 97, Figs. 21 to 24, under the controller-spindle and elevates all of the levers, so that their

fingers 86 do not engage the pawl-carrier, and hence said pawl-carrier engages said wheels all the time. Therefore when the handle is depressed to print and then is permitted to return, as before, the same movement takes place, except that on the backward rotation the units-wheel is caught by the pawl, which is now permitted to oscillate outward to fit into the notches, and the units-wheel is held from further rotary movement while the detents move all the other wheels, the pawls for those other wheels being held away from their wheels unless the deep recess happens to be opposite the pawls for the purpose of carrying. If the operator desires to set the machine for "duplicating"—as, for example, when it is desired to print the same number on a check and its stub—the indicator is moved to the point 2, moving the controller-spindle, so that the lever 80 projects up into its notch 93 and letting its other end fall upon the controller 104, which has the eight projections governed by the eight ratchet-teeth on its ratchet-wheel. Now assuming that the parts are in the positions shown in Fig. 9, with the controller permitting the lever to hold the pawl away from the notches in the units-wheel, this wheel moves with the rest and does not change on this reciprocation; but on the next reciprocation the ratchet-wheel has been turned one step, so that one of the other projections on the controller moves its lever upward, disengaging the finger from the pawl and permitting said pawl to engage the notches of the units-wheel, and this next time the wheel is advanced one step, or rather it is held back by its pawl while all the other wheels move, as hereinbefore described. As the operator continues to depress the handle the lever is allowed to fall again, and on the next depression it is permitted to rise again, thus allowing the pawl to hold the wheels at one depression and allowing them to move at the next. Now if the operator desires to set the machine for printing the same number three times before changing automatically, the indicator is moved to the point 3, and hence the lever over the opposite controller (the one with the six teeth and two projections) is moved into action. Now the controller permits the lever to hold the pawl down for three times before it moves its lever up to disengage the finger from the pawl-bar to permit the pawl to engage the wheel for advancing it. Finally, if the operator desires to print four different articles each time with the same number before changing automatically the indicator is moved to the point designated by the point 4. The levers are all thrown out of action now except the one which engages only with the two parts projecting farthest from the controller 104. Hence when the lever is permitted to hold the pawl down for four reciprocations and then one of the projections is moved under the lever, shoving it out of the way of the pawl and permitting the latter to engage the wheel. It will be obvious that further levers may be used and that the machine may be set to print a greater number of times by adding to the parts now shown. It is also manifest that other modifications may be made, it being sufficient to point out the fact that instead of using projections 78 on the wheels and notches in the detents notches may be formed in the wheels to be engaged by points projecting from the detents. These and other modifications may be made in my machine without departing from the lines of my invention, the scope of which is pointed out in the appended claims.

What I claim as new is—

1. In a numbering-machine, a series of numbering-wheels, and means for oscillating said wheels on their axes from an inking-plane to a printing-plane and from the printing-plane back to the inking-plane.

2. In a numbering-machine, a series of numbering-wheels, an inking-pad located in inking relation to said wheels, and means for oscillating said wheels on their axes from said inking-pad to the printing-plane and from the printing-plane back to said inking-pad.

3. In a numbering-machine, a movable ink-pad, a series of numbering-wheels, and means for moving said pad and for oscillating said wheels on their axes from an inking-plane to a printing-plane and from the printing-plane back to the inking-plane.

4. The combination of a series of numbering-wheels, a barrel supporting said wheels, means for oscillating said barrel and its wheels on its axis, said wheels normally occupying an inking-plane and oscillating to the printing-plane.

5. The combination of a numbering-head having a barrel and a series of numbering-wheels, said barrel having a series of detents coacting with said wheels, and the barrel and detents having a limited oscillation on the axis of said barrel, and means for oscillating said barrel so that its wheels move from an inking-plane to a printing-plane.

6. In a numbering-machine, the combination of a movable inking-pad, a numbering-head comprising a series of numbering-wheels, and a mechanism for oscillating said wheels on the depression of said head from the inking-pad to the printing-plane.

7. The combination of a series of numbering-wheels, of a pawl-bar acting on the interior surfaces of said numbering-wheels and having no rotary movement but a slight oscillation on its axis.

8. The combination in a numbering-head having a series of numbering-wheels, an oscillating pawl-bar acting on the interior surfaces of said wheels, and having no rotary

movement but a slight oscillation on its own axis, and means for holding said bar out of contact with the numbering-wheels.

9. The combination in a numbering-head, numbering-wheels, a support for said wheels, and a pawl-bar coacting with the interior surfaces of said wheels and oscillating in and out of contact therewith, said pawl-bar having no rotary movement but a slight oscillation on its own axis.

10. In a numbering-head, a series of numbering-wheels, a support for said wheels, an oscillating pawl-bar coacting therewith, and exterior means projecting down and acting on said oscillating pawl-bar, said pawl-bar having no rotary movement but a slight oscillation on its own axis.

11. In a numbering-head, a series of numbering-wheels, a support for said wheels, said wheels and said support being capable of partial rotation on their axes, an oscillating pawl-bar coacting with said wheels, said pawl-bar having no rotary movement but a slight oscillation on its own axis, and means projecting downward and acting on said oscillating pawl-carrier.

12. The combination of a series of numbering-wheels, and a barrel or support carrying said wheels and having a limited oscillation on its axis, and means independent of said wheels for oscillating said barrel.

13. The combination of an inking-pad, a series of numbering-wheels, and a barrel or support carrying said wheels and having a limited oscillation on its axis, and means independent of said wheels for oscillating said barrel and moving said wheels from the inking-pad to the printing position.

14. The combination of a series of numbering-wheels, a barrel or support carrying the same and having a limited oscillation on its axis, means as the detents carried by said barrel for moving the barrel and wheels together.

15. The combination of a series of numbering-wheels, a barrel or support carrying said wheels and having a limited oscillation on its axis, spring-actuated detents carried by said support or barrel for moving the wheels with the support or barrel.

16. The combination of a series of numbering-wheels, detents coacting within said wheels to hold the wheels in position, and means for locking said detents in position.

17. In a numbering-head, a barrel or support, a series of numbering-wheels supported on said barrel, detents coacting between said barrel and said numbering-wheels for holding the same together, and means for locking said detents in position.

18. In a numbering-head, a barrel or support, a series of numbering-wheels supported by said barrel, a detent for each wheel coacting with the barrel and wheels to hold said wheels in position, a pawl-carrier, means for moving said barrel with its detents against said carrier to lock the latter in position.

19. In a numbering-head, a barrel or support capable of a partial rotation on its axis, a series of numbering-wheels carried by said barrel, a detent for each wheel moving the barrel and wheels together and means for locking said detents to hold said wheels in their printing position.

20. The combination of a numbering-head having a barrel or support and a series of numbering-wheels, said barrel having a series of detents coacting with said wheels to lock the wheels and barrel together and the barrel and detents having a limited oscillation on the axis of said barrel, means for oscillating said barrel so that its wheels move from an inking-plane to a printing-plane, and means for locking the detents to the wheels when the wheels are in the printing position.

21. In a numbering-head, a barrel or support, a series of numbering-wheels carried by said barrel, a detent for each wheel arranged to move said barrel and wheels together, the barrel, wheels and detents having a limited oscillation or rotation from an inking-plane to a printing-plane, and a pawl-carrier arranged to lock the detents to the wheels when in the printing position.

22. In a numbering-machine, a series of numbering-wheels, a pad located adjacent to said wheels, and a lever moving against the frame and receiving motion therefrom and thereby throwing said pad against the wheels.

23. In a numbering-machine, a head carrying a series of numbering-wheels, an inking-pad held in inking relation to said wheels, and a lever for throwing said pad against said wheels, one end of said lever pivoted to said head and moving against the frame and thereby moving the pad.

24. In a numbering-machine, a series of numbering-wheels, a pad pivotally held in relation to said wheels, a spring for normally tending to throw said pad away from said wheels, and means for forcing said pad against said wheels in opposition to said spring.

25. In a numbering-machine, a series of numbering-wheels, a pad-carrier, a pad pivotally held in an inking relation to said wheels, and means for locking said pad in its normal position, said pad being movable on its pivot out of the inking position when said locking means is unlocked.

26. In a numbering-machine, a series of numbering-wheels, a rod or spindle, an inking-pad pivoted to said rod or spindle; and a connection between said pad and said rod or spindle for locking the same in inking position, said pad being movable on the rod or spindle out of position when said device is unlocked.

27. In a numbering-machine, a reciprocating head carrying a series of numbering-

wheels, and an inking-pad pivotally held in inking relation to said wheels when the head is in its upper position and movable away from said wheels when the head is reciprocated to its lower position, said pad being movable on its pivot out of inking position without reciprocating the head.

28. In a numbering-machine, a reciprocating head carrying a series of numbering-wheels, an inking-pad pivotally held in inking relation to said wheels when the head is in its upper position and movable away from said wheels as the head is reciprocated downward, said pad being movable on its pivot out of inking position without reciprocating the head, and a device for normally holding said pad in its proper position.

29. In a numbering-machine, a reciprocating head carrying a series of numbering-wheels, an inking-pad held in inking relation to said wheels when the head is in its upper position and movable away from said wheels as the head is reciprocated downward, said pad being movable out of inking position without reciprocating the head, and a pivoted latch for normally holding said pad in its proper position.

30. In a numbering-machine, a series of numbering-wheels, an ink-pad box held in inking relation to said wheels, said pad-box being journaled near its center whereby it may move on its journals to take up any inequalities, and a latch for locking said box in position.

31. In a numbering-machine, a series of numbering-wheels, an ink-pad carrier pivotally held with its pad in inking relation to said wheels and capable of being thrown, on its pivot, away from said wheels, said pad-carrier carrying a pad-box journaled in its center, and a latch for locking said carrier in its normal position.

32. In a numbering-machine, a series of numbering-wheels, a spindle or rod, an ink-pad carrier pivoted to said spindle or rod and a latch for locking said carrier to said spindle or rod.

33. In a numbering-machine, a series of numbering-wheels, a spindle or rod and connections whereby said spindle or rod is rocked on the reciprocating movement of said wheels, an inking-pad pivoted to said spindle or rod and a device for locking said pad to said spindle whereby the two move together.

34. In a numbering-machine, a series of numbering-wheels, a spindle or rod and connections whereby said spindle or rod is rocked on the reciprocating movement of said wheels, an inking-pad pivoted to said spindle or rod a id a pivoted latch for locking said pad to said spindle whereby the two move together.

35. In a numbering-machine, a series of numbering-wheels having reciprocating movement, a rod or spindle having means for rocking the same when said wheels are reciprocated, an ink-pad carrier pivoted to said spindle or rod, and a latch for locking said carrier to said spindle whereby they move together, said carrier being capable of being reversed on said spindle or rod when the latch is unlocked.

36. In a numbering-machine, a series of numbering-wheels having reciprocating movement, a rod or spindle having means for rocking the same when said wheels are reciprocated, an ink-pad carrier pivoted to said spindle or rod, an ink-pad supported by said carrier and journaled near its center, and a latch for locking said carrier to said spindle whereby they move together, said carrier being capable of being reversed on said spindle or rod when the latch is unlocked.

37. In a numbering-machine, a yoke, numbering-wheels carried by said yoke, a substantially flat pad pivoted to said yoke and having a swinging movement on its pivot and said pivot having no movement with respect to the yoke.

38. In a numbering-machine, a yoke carrying a series of numbering-wheels, and a pad-carrier pivoted to said yoke, and a substantially flat pad within said carrier, the axis of rotation of the pad-carrier having no movement independent of the yoke.

39. In a numbering-machine, a numbering-wheel having on its interior annular surface a series of notches and a deep recess, and also having alongside of said recess a smooth interior surface substantially flush with the interior annular surface of the wheel adapted to prevent the wheel from dropping out of alinement.

40. In a numbering-machine, a numbering-wheel having on its interior annular surface a series of notches and a deep recess, and also having means for engaging detents, said wheel also having alongside of said recess a smooth interior surface substantially flush with the annular surface of the wheel adapted to prevent the wheel from dropping out of its proper position or alinement.

41. In a numbering-machine, a series of numbering-wheels, a series of pawls and means coacting with said pawls to hold the same out of contact with said wheels and a controller separate from the pawls for periodically moving said means to release said pawls.

42. In a numbering-machine, a series of numbering-wheels, a pawl coacting with the interior of said wheels, and a controller and operative connections separate from and coacting with said pawl and permitting it to move periodically.

43. In a numbering-machine, a series of numbering-wheels, a pawl, a lever coacting with said pawl, and automatic means periodically freeing said lever from said pawl.

44. In a numbering-machine, a series of numbering-wheels, a pawl, a lever coacting with said pawl to hold the same in one position and means for periodically moving the lever to release the pawl.

45. In a numbering-machine, a series of numbering-wheels, a pawl, a lever coacting with said pawl, an automatic controller for periodically freeing said lever from said pawl and means independent of the controller for determining the position of said lever.

46. In a numbering-machine, a series of numbering-wheels, a pawl, a lever coacting with said pawl, an automatic controller for periodically freeing said lever from said pawl, means independent of the controller for determining the position of said lever, and an indicator controlling said means.

47. In a numbering-machine, a series of numbering-wheels, a pawl, a device coacting with said pawl, a spindle coacting with said device having a bevel-gear thereon and an indicator having a bevel-gear meshing with the gear on the spindle whereby the position of said indicator controls the position of said pawl.

48. In a numbering-machine, a series of numbering-wheels, a pawl, an indicator and mechanism comprising a pair of bevel-gears between said indicator and said pawl for controlling the position of the latter.

49. In a numbering-machine, a series of numbering-wheels, a pawl, a lever coacting with said pawl, an indicator, and mechanism between said indicator and said pawl for controlling the position of the latter, said mechanism comprising a pair of bevel-gears.

50. In a numbering-machine, a series of numbering-wheels, a pawl, a lever coacting with said pawl, an indicator and intermediate mechanism for controlling the position of said lever, and an automatic controller periodically moving said lever.

51. In a numbering-machine, a series of numbering-wheels, a pawl, a lever coacting with said pawl, a spindle controlling the position of said lever, an indicator for moving said spindle and an automatic controller periodically moving the lever to release it from said pawl.

52. In a numbering-machine, a series of numbering-wheels, a pawl, a lever coacting with said pawl and an automatic controller for periodically releasing said lever from said pawl, said controller having a step-by-step movement.

53. In a numbering-machine, a series of numbering-wheels, a pawl, a lever coacting with said pawl, and an automatic controller for periodically releasing said lever from said pawl, said controller comprising a ratchet-wheel giving it a step-by-step movement.

54. In a numbering-machine, a series of numbering-wheels, a pawl, a lever coacting with said pawl and an automatic controller for periodically releasing said lever from said pawl, said controller having a member rotating against said lever and also comprising a ratchet-wheel for giving the same movement.

55. In a numbering-machine, a series of numbering-wheels, a pawl acting on the interior of said wheels, a rotary device for controlling said pawl, said device comprising a projection and a ratchet-wheel by which the same is rotated.

56. In a numbering-machine, a series of numbering-wheels, a pawl, a device as a lever coacting with said pawl, and a rotary controller having projections coacting with said lever for moving it away from the pawl, and a ratchet-wheel for rotating the controller.

57. In a numbering-machine, a series of numbering-wheels, a pawl, a device as a lever coacting with said pawl, and a rotary controller having projections coacting with said lever for moving it away from the pawl, and a ratchet-wheel for rotating the controller, said ratchet-wheel being given a step-by-step movement by the reciprocating movement of the wheels.

58. In a numbering-machine, a series of numbering-wheels, a pawl, a device as a lever coacting with said pawl, and a rotary controller having projections coacting with said lever for moving it away from the pawl, and a ratchet-wheel for rotating the controller, said ratchet-wheel being given a step-by-step movement by the reciprocating movement of the wheels, and having the number of its ratchet-teeth in multiples of the projections whereby a number of reciprocations move the numbering-wheels only once.

59. In a numbering-machine, a series of numbering-wheels, a pawl, a lever coacting with said pawl, and a spindle coacting with said lever, said spindle moving said lever to and from said pawl.

60. In a numbering-machine, a series of numbering-wheels, a pawl, a series of levers coacting with said pawl, and a spindle coacting with said levers moving the levers independently of each other.

61. In a numbering-machine, a series of numbering-wheels, a pawl, a series of levers coacting with said pawl, and a spindle coacting with said levers and moving the levers independently of each other, and an indicator controlling the position of said spindle.

62. In a numbering-machine, a series of numbering-wheels, a pawl acting on the interior surfaces of said wheels, a controller for said pawl comprising a member adapted to be rotated and a ratchet-wheel and connections for rotating the same.

63. In a numbering-machine, a series of numbering-wheels, a pawl, a series of levers coacting with said pawl, a spindle having a series of sides coacting with said levers, a dial having a series of indicating-points corresponding to said sides, and an indicator co-

acting with said dial and arranged to move said spindle.

64. In a numbering-machine, a series of numbering-wheels, a pawl, a series of levers coacting with said pawl, a spindle having a series of sides coacting with said levers, a dial having a series of indicating-points corresponding to said sides, an indicator coacting with said dial and arranged to move said spindle, and bevel-gearing between said indicator and said spindle.

65. In a numbering-machine, a main frame, a reciprocable yoke, a series of numbering-wheels carried thereby, means for rotating said wheels comprising a cam coacting with a part projecting from the main frame, said cam having a straight side also coacting with said projecting part of the main frame for insuring vertical movement at one part of the reciprocation.

66. In a numbering-machine, a main frame, a reciprocable yoke, a series of numbering-wheels carried thereby, means for rotating said wheels, comprising a cam coacting with a part projecting from the main frame, said cam having two straight edges also coacting with said projecting part whereby a vertical movement is insured to the wheels at the beginning and ending of the reciprocation.

67. In a numbering-machine, a yoke or wheel-frame, a series of numbering-wheels carried thereby, and mechanism coöperating with the numbering-wheels, said mechanism comprising detents, a pawl and lever, and the latter being located within said yoke.

68. In a numbering-machine, a yoke or wheel-frame, a series of numbering-wheels carried thereby, and mechanism coöperating with the numbering-wheels; said mechanism comprising detents, a pawl, a lever and a spindle for determining the position of said lever and pawl, said lever and spindle being located within said yoke.

69. In a numbering-machine, a yoke or wheel-frame, a series of numbering-wheels carried thereby, and mechanism coöperating with the numbering-wheels, said mechanism comprising detents, a pawl, a lever and a spindle for determining the position of said lever and pawl, said lever and said spindle being located within said yoke, and an indicator moving said spindle.

70. In a numbering-machine, a series of numbering-wheels, a barrel or support carrying said wheels, said wheels and said barrel being arranged to oscillate together, and a pawl coacting with said numbering-wheels and having no rotary movement but a slight oscillation on its own axis.

71. In a numbering-machine, a series of numbering-wheels, a barrel or support carrying said wheels, said wheels and said barrel being arranged to oscillate together, means for oscillating said barrel and said wheels so that the wheels move from an inking to a printing plane, and a pawl coacting with said numbering-wheels and having no rotary movement but a slight oscillation on its own axis.

72. In a numbering-machine, a series of numbering-wheels, a barrel or support carrying said wheels, said wheels and said barrel being arranged to oscillate together, a pawl coacting with said numbering-wheels and having no rotary movement but a slight oscillation on its own axis, and a periodically-moving controller coacting with said pawl.

73. In a numbering-machine, a series of wheels, a barrel or support carrying said wheels, said wheels and said barrel being arranged to oscillate together, and mechanism for oscillating all of said wheels from the inking-plane to the printing-plane, and means for holding the units-wheel and permitting the other wheels to move beyond the units wheel on the backward oscillation.

74. In a numbering-machine, a series of wheels, means for oscillating said wheels from the inking-plane to the printing-plane, said means holding the units-wheel and permitting the other wheels to move beyond the units-wheel on the backward oscillation, and a controller coacting with the said means to make the same inactive.

75. In a numbering-machine, a series of numbering-wheels, said wheels being arranged to oscillate, mechanism for oscillating said wheels from the inking-plane to the printing-plane, said mechanism holding the units-wheel and permitting the other wheels to move beyond the units-wheel on the backward oscillation, and means for controlling said mechanism and permitting the numbering-wheels to move together both on the backward and forward oscillations.

76. In a numbering-machine, a series of numbering-wheels, a barrel or support carrying said wheels, a pawl-bar, said wheels and said barrel being arranged to oscillate together and said pawl-bar having no rotary movement except a slight oscillation on its axis and means for holding said pawl-bar inactive.

77. In a numbering-machine, a series of numbering-wheels, means for oscillating said wheels from an inking-plane to a printing-plane and certain of said wheels from the printing-plane back to the inking-plane, and means for holding one of said wheels while the other wheels move beyond it on the backward oscillation.

78. In a numbering-machine, a series of numbering-wheels, means for oscillating said wheels from an inking-plane to a printing-plane and certain of said wheels backward from the printing-plane to the inking-plane, means for holding one of said wheels on the

backward oscillation and permitting the other wheels to move beyond it, and means for making this holding means inactive.

79. In a numbering-machine, a series of numbering-wheels, means for oscillating said wheels from an inking-plane to a printing-plane and certain of said wheels backward from the printing-plane to the inking-plane, a pawl for holding one of said wheels on the backward oscillation and permitting the other wheels to move beyond it.

80. In a numbering-machine, a series of numbering-wheels, means for oscillating said wheels from an inking-plane to a printing-plane and certain of said wheels backward from the printing-plane to the inking-plane, a pawl for holding one of said wheels on the backward oscillation and permitting the other wheels to move beyond it, and means for holding said pawl inactive.

81. In a numbering-machine, a series of numbering-wheels, means for oscillating said wheels from an inking-plane to a printing-plane and certain of said wheels backward from the printing-plane to the inking-plane, a pawl holding one of said wheels on the backward oscillation and permitting the other wheels to move beyond it, and periodically-operated mechanism for controlling the position of said pawl.

Signed by me at Chicago, Illinois, this 27th day of July, 1905.

LOUIS K. SCOTFORD.

Witnesses:
JOHN M. CAMERON,
M. M. IRVIN.