

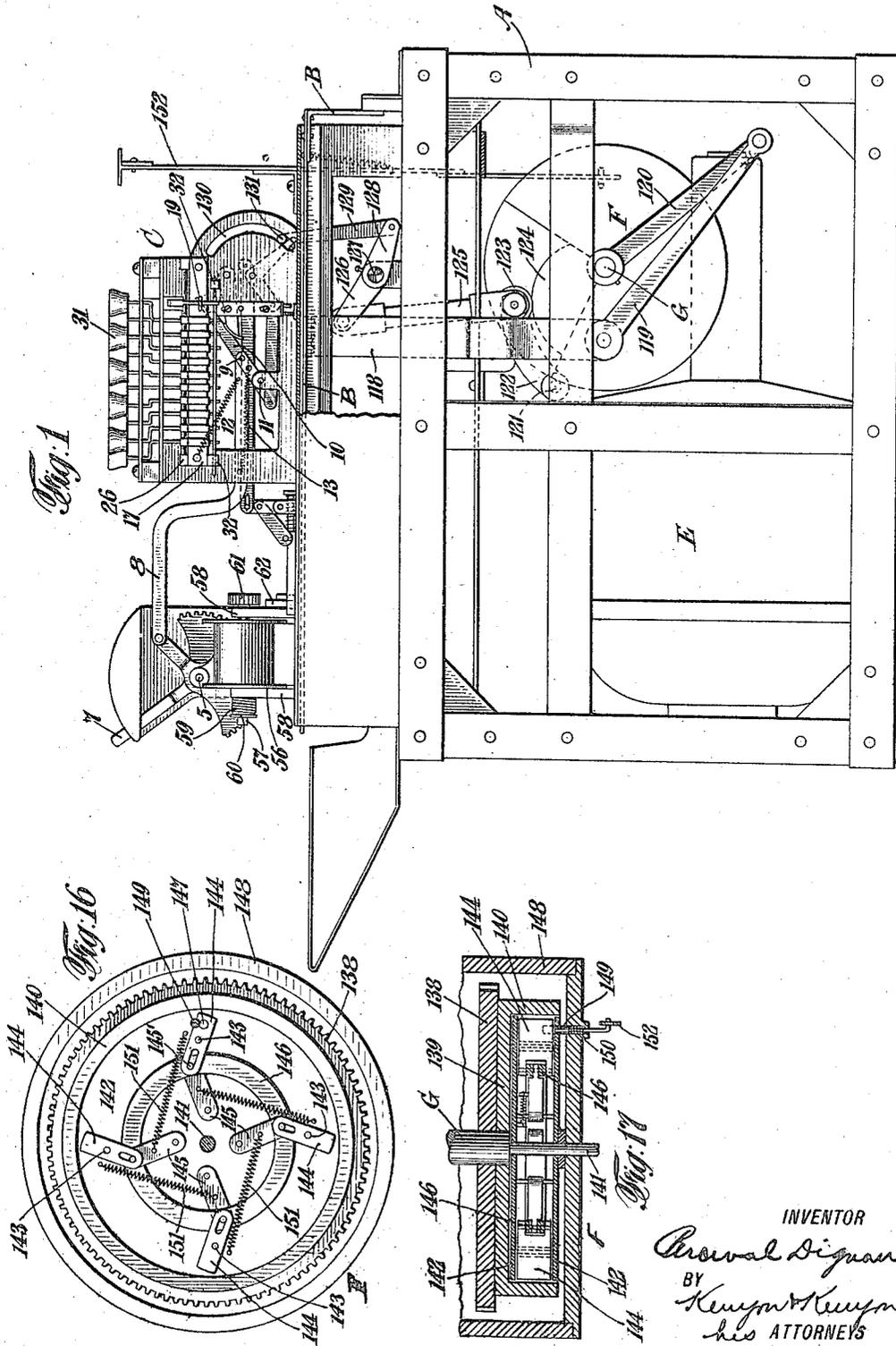
P. DIGNAN.  
PRINTING MACHINE.

APPLICATION FILED NOV. 12, 1915.

Patented Sept. 25, 1917.

4 SHEETS—SHEET 1.

1,240,828.

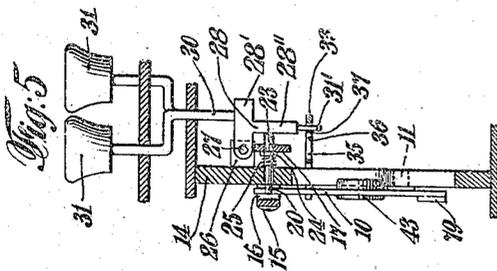
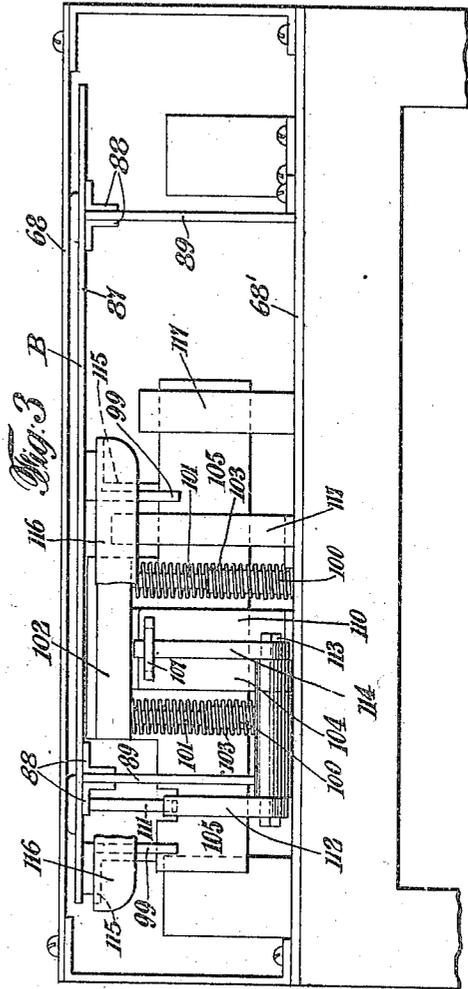
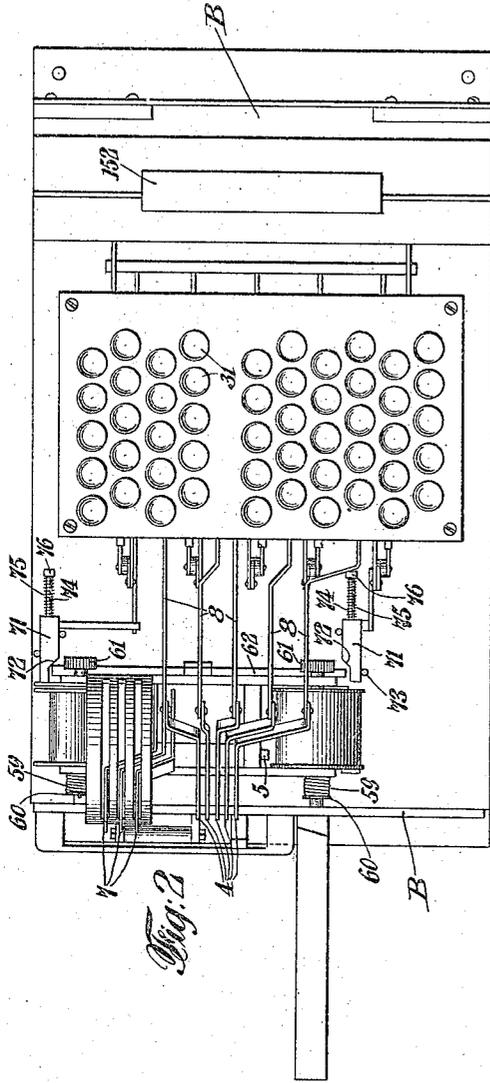


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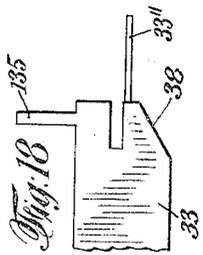
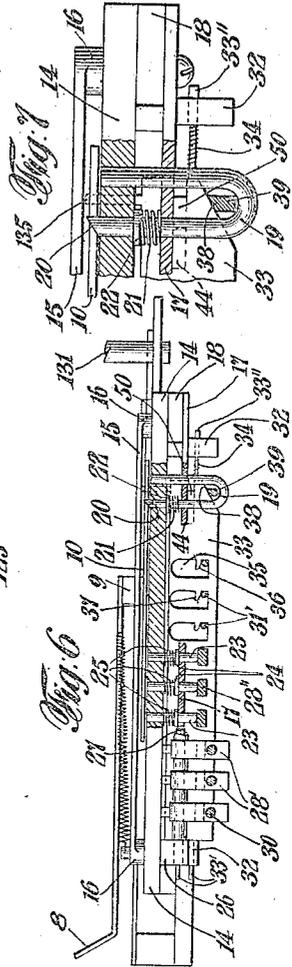
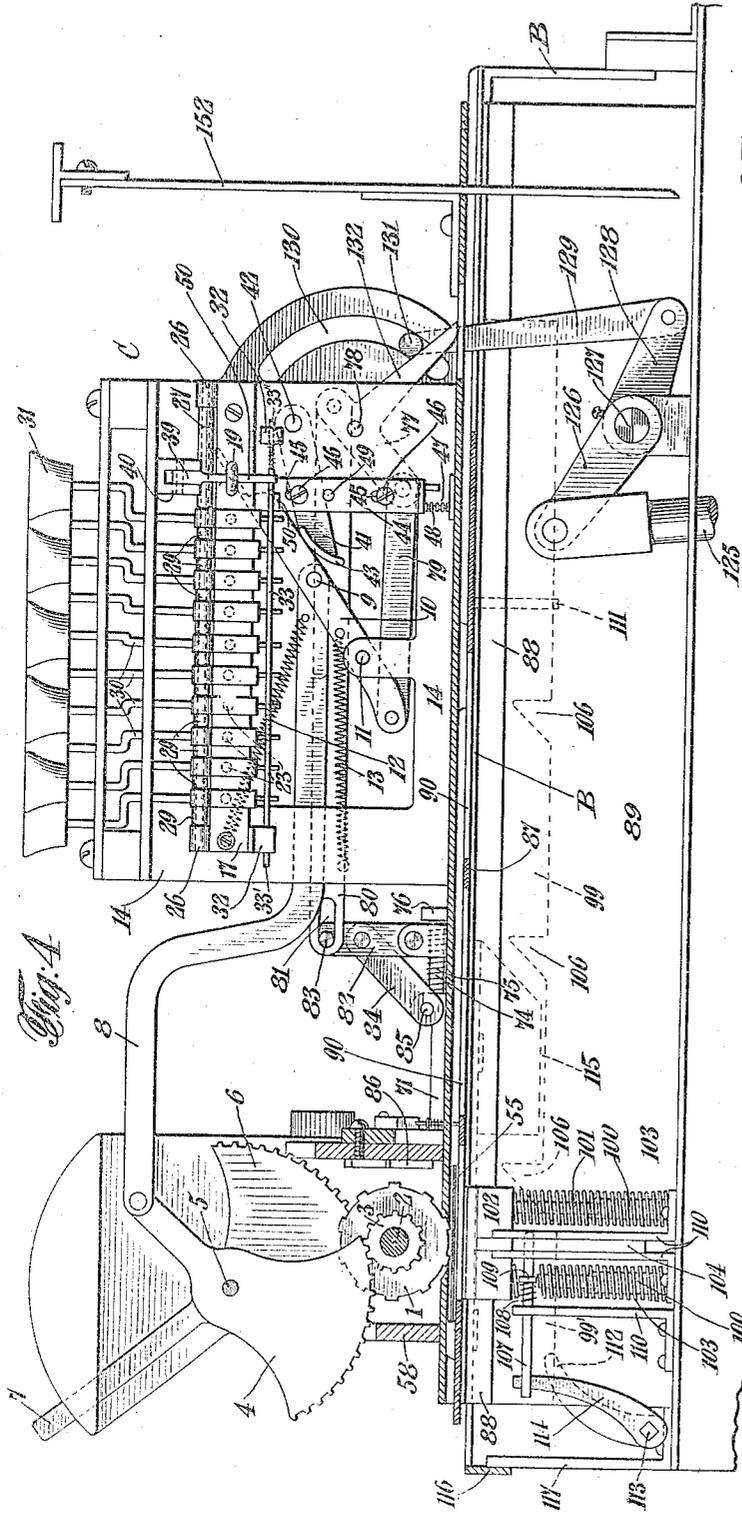
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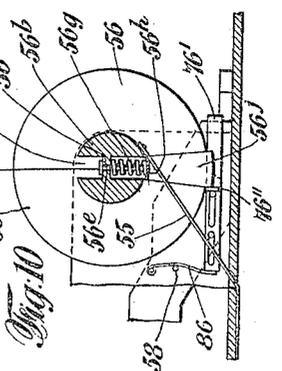
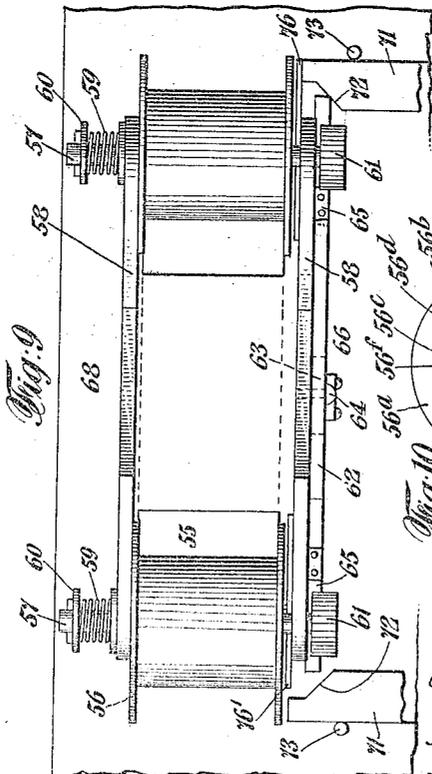
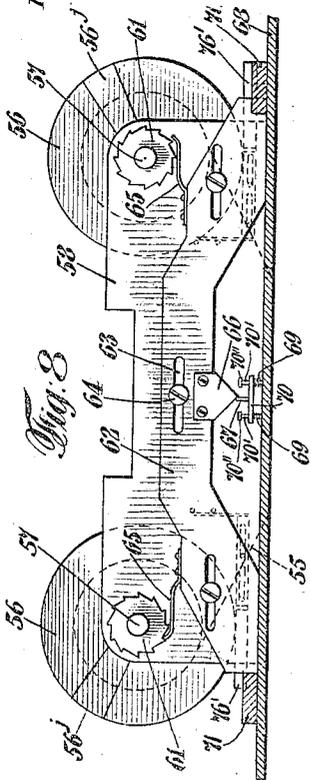
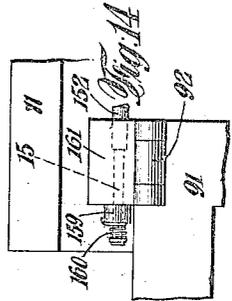
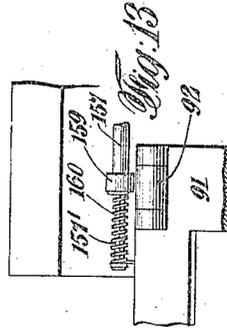
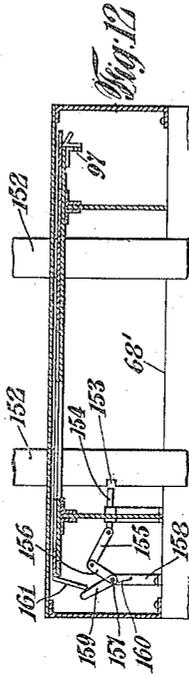
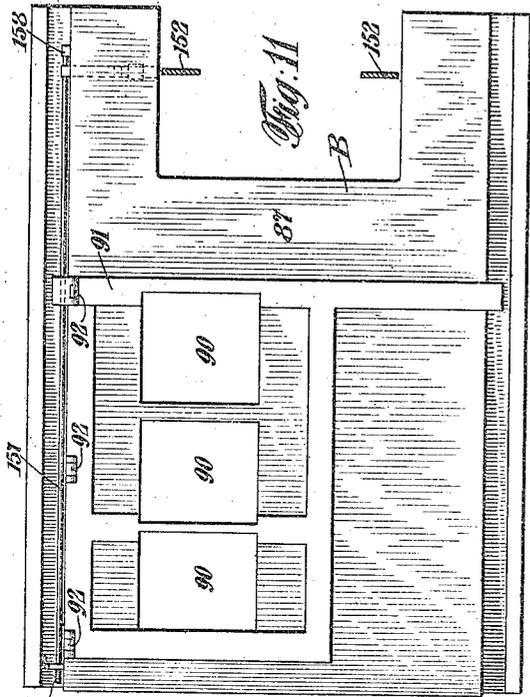


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 his ATTORNEYS

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Patented Sept. 25, 1917.

4 SHEETS—SHEET 4.



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# UNITED STATES PATENT OFFICE.

PERCIVAL DIGNAN, OF NEW YORK, N. Y., ASSIGNOR TO R. H. MACY & CO., A COPARTNERSHIP COMPOSED OF JESSE ISIDOR STRAUS, PERCY S. STRAUS, AND HERBERT N. STRAUS.

## PRINTING-MACHINE.

1,240,828.

Specification of Letters Patent. Patented Sept. 25, 1917.

Application filed November 12, 1915. Serial No. 61,004.

*To all whom it may concern:*

Be it known that I, PERCIVAL DIGNAN, a citizen of the Commonwealth of Australia, and a subject of the King of Great Britain, and a resident of the borough of Manhattan, city, county, and State of New York, have invented certain new and useful Improvements in Printing-Machines, of which the following is a specification.

10 My invention relates to printing machines, and particularly to that class of printing machines which includes apparatus for setting up in type a series of characters to be printed, together with apparatus for printing the series of characters on an object on which it is desirable to have it appear.

15 One object of my invention is to provide mechanism for moving type-carrying or "composing" members to set up in type a series of characters.

20 Another object is to provide means for operating and for controlling the operation of mechanism for moving type-carrying or "composing" members.

25 Another object is to provide means for moving an article on which it is desired to print a series of characters relatively to the type, by means of which said characters are printed, together with means for impressing said article against said type at intervals during relative motion of the type and article-moving means, whereby said characters may be printed one or more times upon said article at different places.

30 Another object is to provide mechanism for actuating means for carrying an article and impressing the article against type adjustable to different settings and for putting in operative condition apparatus for setting the type.

35 Another object is to provide a device for driving mechanism which actuates article-carrying means and for putting in operative condition apparatus for setting type for printing characters on an article, which device comprises a clutch which, when set into operative condition, imparts a motion of predetermined extent to the mechanism and apparatus and thereafter becomes inoperative.

40 Another object is to provide mechanism for moving type members, which includes means constantly tending to operate the mechanism, the mechanism being combined

with devices for releasably restraining the operating means and devices for limiting the motion of the members and apparatus for actuating the devices.

45 Another object is to provide a carriage for moving an article relatively to type members, which carriage is combined with a device constantly tending to operate to impress said article against said type during the motion of the carriage, and means carried by said carriage for permitting the operation of the impressing device at intervals during the movement of the carriage, there being releasable restraining means for the impressing device which is both set into operative condition and released by the carriage.

50 Another object is to provide supporting means for an inking ribbon for type members which moves the ribbon step by step through automatically reversible mechanism which has motion imparted to it by apparatus which operates to move the type members to different settings.

55 Another object is to provide a carriage for moving an article relative to type members, which carriage has means for holding in position an article placed thereon, the said carriage being combined with mechanism for moving it relatively to the type members, and the mechanism being controlled by the holding means mounted on the carriage.

60 Other and further objects and advantages will appear from the following description, taken in connection with the accompanying drawings forming a part of the specification, and will be pointed out in the claims.

65 In the drawings, in which like reference characters indicate similar parts,

70 Figure 1 is a side view of a printing machine embodying my invention;

75 Fig. 2 is a top view of the device shown in Fig. 1;

80 Fig. 3 is a partial end view, looking at the device shown in Figs. 1 and 2 from the left side;

85 Fig. 4 is an enlarged side view, partially in section, of the device shown in Figs. 1 and 2;

90 Figs. 5, 6 and 7 show details of the mechanism for controlling the type member moving mechanism;

105

Figs. 8, 9 and 10 show details of the ribbon moving mechanism;

5 Figs. 11, 12, 13, 14 and 15 show details of the means for holding an article upon the article-moving carriage and for actuating an operating mechanism lock;

10 Figs. 16 and 17 show details of the clutch which transmits movement of predetermined extent from a source of power to the operating mechanism; and

15 Fig. 18 is a detail view of the latch member.

In order to disclose my invention, I shall describe in this specification a numbering device, but it is to be understood that my invention may be applied to other devices where its utility is apparent to those skilled in the art, and that my invention is not limited to the single application herein described.

20 The device herein described which embodies my invention comprises mechanism for setting type members for the purpose of printing various series of characters, mechanism for controlling the operation of the type member moving mechanism, a carriage for moving an article, upon which it is desired to print a series of characters, across the face of the type set to print those characters, mechanism for pressing an article so moved against the type at intervals during its movement, mechanism operated by the type-setting mechanism for moving a ribbon across the face of the type, and mechanism for transmitting a predetermined amount of power from a common source of power to the type-setting and carriage-moving mechanism.

35 The device illustrated in the drawings includes a frame A upon which is mounted a carriage B, type-setting mechanism and control mechanism therefor generally indicated by the letter C, a source of power comprising an electric motor E, and a clutch F for imparting motion, predetermined in extent, to an operating shaft G.

40 The type members consist of type wheels 1 (Fig. 4), which are mounted for rotation upon a shaft 2, and which have attached to them gear wheels 3. With these gear wheels segments 4 cooperate. Segments 4 are mounted to rotate upon the shaft 5. There may be any number of type wheels 1, according to how great a number, or according to the nature of the series of characters which it is desired to print.

45 If there are characters which it is desired to print which are repeated a number of times, these characters are placed upon type wheels operated by segments 6, which are actuated by hand-moved levers 7. As an example, a date may be set up upon type wheels by use of hand-moved levers.

50 Type wheel moving segments 4 are oper-

ated by links 8, which are pivoted at 9 to sweeps 10, which sweeps are pivoted at 11. It will be seen that the swinging of the sweep 10 will rotate its corresponding type wheel. Springs 12 and 13 act respectively upon links 8 and sweeps 10 to rotate the sweeps counter-clockwise. The mechanism for restraining the sweeps against movement, releasing the sweeps to move and limiting their operation is shown in Figs. 5, 6 and 7. Each sweep is pivoted at 11 upon a plate 14. Secured to one face of the plate 14 is a guide bar 15, which is spaced from the plate 14 by lugs 16. Between the guide bar 15 and the plate 14 the sweep moves. Mounted upon the opposite face of the plate 14, there is a supporting bar 17, spaced from the plate 14 by distance pieces 18. Extending through the plates 14 and 17, there is a catch 19, which has a beveled end 20. The catch 19 is operated by a spring 21, acting on a washer 22, which presses the end of the catch 20 out into the path of the sweep 10. When the sweep 10 is swung back to the position in which it is shown in Fig. 4, it is held from moving counter-clockwise under the action of the springs 12 and 13 by the catch 19. Extending through the plates 14 and 17, there is a series of stop pins 23, which have collars 24 mounted upon them, against which springs 25 press. The springs 25 also press against one face of the plate 14. The stop pins are adapted to be pushed through the plate 14 against the action of the springs 25 into the path of the sweep 10, as it moves between the guide bar 15 and the plate 14. These stop pins are selectively moved to limit the operation of the type member moving mechanism. Mounted on the plate 14 are lugs 26, in which there is held a rod 27. Mounted upon this rod, there is a series of rocker members 28, which are kept spaced apart by sleeves 29, so that they occupy positions in which they are resting against the outer ends of the stop pins 23. The rocker members comprise horizontal portions 28' and downwardly-extending portions 28''. Resting upon the horizontal portion 28' of each stop, there is a shank 30 of a corresponding key 31. The keys are held in normal position by the action of the springs 25; and, when the keys are pressed downward, the rocker members swing about the pivot rod 27 and push the stop pins out into the path of the sweep 10. Downwardly extending from the vertically-extending portion 28'' of each rocker member 28, there is a latch-operating part 31'. Below the lugs 26, there are other lugs 32, in which there is mounted for longitudinal movement a latch bar 33. This latch bar has two pins 33' extending from one end of it through one of the lugs 32 and is thereby held against rotation. At the other end of the latch bar, there is a rod 33'', which

extends through the other lug 32, and which is surrounded by a spring 34, which presses against the latch bar and the adjacent lug 32 and holds the latch bar at the limiting position of its lefthand movement. In the latch bar 33, there are openings 35, one for each latch-operating part 31', and the latch-operating parts extend down into the openings 35. Extending from one side of each opening 35, there is a tongue which has a sloping side 36 and a straight side 37. The latch-operating part 31' normally rests against the sloping side 36 of this tongue. When the key is pressed down, the rocker member 28 is rotated about its supporting shaft 27, and it presses a corresponding stop pin 23 out into the path of the sweep 10. As the rocker member 28 swings, the latch-operating part 31' which is attached thereto presses against the sloping side 36 of the cooperating tongue and causes the latch bar 33 to move to the right against the action of the spring 34. When the key 31 has been pressed down as far as it will go, the corresponding pin 23 blocks the path of the sweep 10 and the corresponding latch-operating part 31' will be positioned adjacent the straight side 37 of the corresponding tongue. The straight side of this tongue will hold the stop pin and operating mechanism therefor in operative position as the latch bar moves to the left under the action of the spring 34 as soon as the latch-operating part 31' passes the point of its cooperating tongue. As the latch bar moves to the right under the action of the latch-operating part 31' upon the sloping face 36 of the tongue, the sloping face 38 of the latch bar cooperates with a member 39, which is pivoted at 40, and which is positioned inside of the loop of the catch 19, and withdraws the catch 19 from its position in front of the sweep 10. The sweep is no longer restrained by the catch 19, and, therefore, swings counter-clockwise under the action of the springs 12 and 13 until it strikes that stop pin 23 which has been placed in its path. Upon the plate 14 there is pivoted at 42 a link 41. This link has a cam face 43, against which the sweep 10 rests when the sweep is in normal restrained position. A lock-operating member 44 is provided with slots 45, through which screws 46 pass into one of the faces of the plate 14. The locking bar 44 is provided with a pin 47 at its lower end, around which there is placed a spring 48, which holds the locking bar in its proper position. Secured to the locking bar 44 is a pin 49, upon which the link 41 rests. The top of the locking bar 44 is provided with a dead-lock member 50. When the sweep 10 is released by a movement of the catch 19, the spring 48 raises the locking bar 44, together with the link 41, and the dead-lock member 50 is brought up into the

path of the latch member 33, so that the latch member cannot be moved to the right after the sweep has once been released. This prevents any latch-operating part 31' from cooperating with the sloping face 36 of one of the tongues to push the latch member to the right and permit the part 31' to move past the tongue, thereby preventing any stop member from being put into operative position after the sweep has been released. This is desirable because it prevents a stop member from being positioned behind the sweep and preventing the sweep from being brought to its normal restrained position. It is to be understood that the parts described will be so proportioned that the selected stop pin will be positioned in the path of the sweep 10 before the latch member cooperates with the member 39 to withdraw the catch 19.

It will be seen that so far there has been described a type-positioning mechanism, together with apparatus for controlling the operation of that mechanism, the said apparatus including selectively operable stop members for limiting the motion of the type-positioning mechanism, the stop members being held in operative position by a latch member, the movement of which releases the type-positioning member, and that there is a dead-lock for the latch member which is allowed to become operative upon movement of the type-positioning mechanism from initial position.

In order that the type wheels may be used to print a series of characters upon an article, an ink-carrying ribbon 55 is positioned across their faces. This ribbon is mounted on reels 56, which are in turn fixed upon shafts 57, which are pivoted in supporting plates 58. One end of each shaft 57 extends outside of its cooperating plate 58, and it has encircling it a coil spring 59, which presses against a collar 60, secured to the shaft. This spring prevents each wheel from moving too freely in its mounting. Upon the opposite end of each shaft 57, there is fixed a ratchet wheel 61. A pawl-carrying member 62 is positioned adjacent one of the plates 58, and it is provided with slits 63, through which screws 64 pass into the adjacent plate 58. Mounted upon the pawl-carrying member, there is one pawl 65 for each ratchet wheel. The pawls are so arranged that only one may cooperate with the ratchet wheel at one time. Upon the pawl-carrying member 62, there is mounted a small plate 66, which has diverging faces forming equal angles with a vertical line. A rod 67 is mounted on a plate 70, which is slidably mounted on posts 70', and is forced upward by the action of springs 69 toward collars 70'', which limit the upward movement of said plate 70. The upper end of this rod 67 is adapted to cooperate with

either face of the plate 66, according to the position of the pawl-carrying member. In the position illustrated in Fig. 8, the rod 67 coöperates with the left-hand face of the plate 66, and the lefthand pawl 65 coöperates with its corresponding ratchet wheel 61. Lying upon the face of the bed-plate 68, there are push rods 71, which have sloping cam faces 72, which respectively coöperate with opposite ends of the pawl-carrying member 62. Lugs 73 in the bed-plate 68 prevent sidewise movement of the push rods 71. Each push rod has an extension 74, which is encircled by a spring 75. The extension 74 passes through a spring stop 76 mounted on the bed-plate 68, and the spring 75 presses against the spring stop 76 and against the push rod 71, and tends to force the push rod to the left to coöperate with the pawl-carrying member. Mounted on the opposite side of the plate 68 from that on which the pawl-carrying member 62 is mounted, there are mounted for sliding limiting members 76'. These members limit the extent of motion of the push rods 71 under the action of the springs 75, and, when the motion of the push rods is so limited, the cam faces 72 move the pawl-carrying member 62 only far enough to rotate one of the reels a distance equal to one notch of its corresponding ratchet wheel and only far enough to cause the upper end of the rod 67 to slide along one of the sloping faces of the plate 62 to a point near the apex. As soon as the push rod 71, which has been moved to the position shown at the right of Fig. 9, is withdrawn, the rod 67 pressing against the sloping face of the plate 66 causes the pawl-carrying member to move to the right, carrying the pawl 65 at the left of Fig. 8 to a new notch in the corresponding ratchet 61.

It will be seen that the limited reciprocation of the push rod 71 at the right of Fig. 9 will impart limited movement to the left to the pawl-carrying member 62, and the spring-pressed rod 67 will cause the pawl-carrying member to move to the right. This operation will be continued until all of the ribbon is wound onto the lefthand reel.

It may be noted at this time that a link 77 is pivoted to the plate 14 at 78 (see Fig. 4). This link has an arm which is connected to the lower end of the sweep 10 by means of a link 79 and an arm to which is connected the link 80, which extends toward the type members. The end of the link 80 is provided with a slot 81. Pivoted to the base-plate 68 is a link 82, which carries a pin 83, which is positioned in the slot 81, and to which is pivoted a link 84, which is pivoted to a push rod 71 at 85.

It will now be seen that as the sweep 10 moves about its pivot 11 the link 80 is moved to the right and to the left. As it moves

to the left, it permits the link 82 to swing counter-clockwise about its pivot, and thereby permits the spring 75 to move the push rod 71 to the left. When the push rod 71 strikes its coöperating limiting member 76', it will be stopped, but the link 80 may continue its motion to the left, because the pin 83 will slide in the slot 81.

Each reel is formed with end disks 56<sup>a</sup> and a core 56<sup>b</sup>. The core 56<sup>b</sup> comprises two members which are spaced to provide an opening 56<sup>c</sup>, which is divided by a partition 56<sup>d</sup>. Mounted in the partition 56<sup>d</sup>, there are pins 56<sup>e</sup>, passing through this partition, and held therein by collars 56<sup>f</sup>, which rest against one side of the partition 56<sup>d</sup>, and by a spring 56<sup>g</sup>, which presses against the other side of the partition and against a curved plate 56<sup>h</sup> mounted on the other end of the pins 56<sup>e</sup>. From the end plates 56<sup>a</sup> of the reels, there are cut segments and, upon the curved plate 56<sup>h</sup>, there are mounted portions 56<sup>i</sup>, which close the openings formed by the removal of the segments.

When the reel is partly filled with ribbon, the springs 56<sup>g</sup> will be compressed by the pressure of the ribbon on the curved plate 56<sup>h</sup>, and the outer ends of the portions 56<sup>i</sup> will be flush with the outer periphery of the disks 56<sup>a</sup>. When the ribbon is almost unwound from the reel, the springs 56<sup>g</sup> will press outward the curved plate 56<sup>h</sup>, as shown in Fig. 10, and one of the portions 56<sup>i</sup> will extend beyond the edge of the corresponding disk 56<sup>a</sup>. This extension will strike against a lug 76'', which is mounted upon the limiting member 76', and rotation of the reel will cause a movement of the limiting member 76' against the action of the corresponding spring 86 to withdraw the limiting member from the path of the push rod 71. The push rod 71 may then move to a position beyond that to which it is shown to have been moved at the righthand of Fig. 9. This will cause a greater movement of the pawl-carrying member 62 than that heretofore described, and the member 62 will move so far that the spring-pressed bar 67 will coöperate with the righthand face of the plate 66; and the lefthand push rod 71 will coöperate to reciprocate the pawl-carrying member 62 and cause the ribbon to be wound upon the righthand reel 56. As soon as there is a certain amount of ribbon upon each reel, the limiting members 76' will occupy their normal position, and the movement of the ribbon will go on step by step until the reversing operation above described is repeated.

The carriage upon which the article is placed upon which it is desired to print the characters consists in a flat plate 87 (see Figs. 3 and 4), which is provided with flanges 88, which coöperate with the tracks 89, mounted upon the bed-plate 68. The car-

riage is provided, as shown in Fig. 11, with openings 90, and positioned over the surface of the carriage is a clamping member 91, which is hinged to the carriage at 92, and which is provided with a catch 93 to hold it flat upon the carriage when an article (for instance, a sales slip) is placed upon the carriage and under the clamping member. The catch 93 is shown in detail in Fig. 15 and consists in a two-armed member 94 pivoted to the clamping member 91 at 95 and having a projection 96, which fits into an opening in the flange 97 on the edge of the carriage, and a spring 98, which tends to swing the two-armed member 94 about the pivot 95. Downwardly from each side of the carriage, there projects a cam member 99, which controls the stamping mechanism, which will be described hereafter. Directly below the type members, there are mounted, upon the plate 68', which is mounted on the frame A, four sockets 100. In these sockets fit loosely four rods 101, which are secured to the lower face of an impressing pad 102, which is pivoted directly below the type wheels. Springs 103 surround the sockets 100 and rods 101, and tend to press upwardly the impressing pad 102. Secured to the impressing pad 102, there is a plate 104, which extends down between the springs 103, and which has wings 105, extending out at each side of the springs 103 and under the cam members 99, which are mounted upon the lower face of the carriage. The cam members 99 are provided with notches 106, so that, as the carriage moves from left to right, the cam members 99 slide along the wings 105, which move into the notches 106, and each time the wings move into the notches 106 the impressing pad will move upwardly and through an opening in the bed-plate 68 and successively through the openings 90 in the carriage and in the clamping plate 91, and press a piece of paper which is between the carriage and the clamping plate 91 against the inking ribbon which is positioned over the face of the type.

The carriage is shown in Fig. 4 in its right-hand limiting position, that is, it is farthest in, and a part 99' of each cam bar 99 which extends down below those portions of the cam bar which are between the notches 106 presses the wings 105 down to an especially low position. This will permit the locking member or latch 107 to be pushed to the right by the action of the spring 108, which presses upon the collar 109. This will cause the locking member to slide in its supporting members 110 and pass through the plate 104 and thereby restrain the impressing pad from motion under the action of the springs 103.

As the carriage moves out, or to the left in Fig. 4, the actuating member 111 strikes

against the arm 112, which is fixed to the shaft 113, which shaft is pivoted to the plate 68'. The rocking of this shaft 113 swings the arm 114 which is attached thereto, thereby withdrawing the locking member 107 and permitting the springs 103 to raise the impressing pad until the wings 105 again cooperate with the cam bars 99.

It will be seen from the structure last described that, as the carriage moves inwardly, or to the right, the cam bars 99 slide along the top of the wings 105 until the wings move into one of the notches 106, and then the impressing pad 102 rises and presses the paper upon the carriage against the ribbon which is in front of the type. When the carriage has reached its limiting inward movement, the wings 105 are pressed down to an extreme position, and the locking member 107 holds the impressing pad down until the carriage has moved to its limiting outward position and the actuating member 111 has caused the rocking of the shaft 113, which results in the withdrawal of the locking member 107, whereby the impressing member is again released and the wings 105 rest against the cam bars 99.

It may be desirable to prevent one or more of the operations of the impressing pad, and, therefore, I provide supplemental cam members 115, to which is attached an operating member 116. These supplemental cam members are attached to the carriage so that they may be slid along respectively adjacent the cam members 99 to prevent the wings 105 from moving into certain notches 106. When the carriage has reached its limiting inward movement, the member 116 strikes the stud 117, and the supplemental cam members are moved away from the corresponding notches 106.

In order to impart motion to the carriage B, a downwardly-extending operating arm 118 is attached thereto. To the lower end of this arm is pivoted a link 119. The shaft G is supported by the frame of the operating mechanism, and it carries a crank arm 120, which is pivoted to the link 119. It will be seen, therefore, that rotation of the shaft G will cause a reciprocation of the carriage B.

Pivoted at 121 to the frame of the operating mechanism is a link 122, in the outer end of which is mounted the roller 123, which cooperates with the cam 124, which is fixed to the shaft G. Pivoted to the free end of the link 122 is a link 125, which cooperates with the arm 126 of rock shaft 127. Secured to the rock shaft 127 are a plurality of arms 128, to which are secured respectively links 129. In the plates 14 which support the type-positioning mechanism controlling apparatus, there are curved slots 130, and in these curved slots there is positioned a bar 131, to which are attached

the links 129. Coöperating with the bar 131, there is an arm 132 of the link 77, so that the link 77 is rotated about its pivot 78 by upward and downward movement of the bar 131.

It will be seen from the structure above described that there is provided mechanism for rotating type wheels which includes a sweep member which has springs acting upon it and tending to rotate it counter-clockwise, a carriage mounted for reciprocation, the reciprocation of which causes the impressing of an article carried by the carriage against the type, and means for reciprocating the carriage and bringing to normal restrained position the mechanism for positioning the type members. When the sweep member is swung clockwise by the action of the bar 131 upon the arm 132 of the link 77, it strikes against the cam face 43 of the link 41 and the locking bar 44 is depressed and the dead-lock member 50 carried by the bar 44 is withdrawn from the path of the latch member 33. Immediately thereafter the sweep member strikes against the pin 135 (Fig. 7), which is secured to the latching member, and thereby moves the latching member to the right against the action of the spring 34 and permits any latch-operating part 31' which may be positioned against the corresponding flat face 37 of a tongue to swing to its normal position under the action of the spring 25, thereby leaving the type-moving mechanism in normal or restrained position and the controlling apparatus for said mechanism in its normal position with all stop pins inoperatively positioned.

It will be seen that one rotation of the shaft G brings about a complete series of operations, and, in order to impart a single rotation to the shaft, I have devised, as a part of my invention, a clutch which will permit the transmission of power, limited in extent, from a constantly operative source to the shaft G and which clutch will thereafter automatically become inoperative. The source of energy for the operation of my device consists in a constantly-running electric motor E. The motor drives a worm which drives the worm wheel 138. This worm wheel 138 is loosely mounted on the shaft G. Fixed to the worm wheel 138 is the plate 139, which carries a cylindrical flange 140. The shaft G is provided with an extension 141, to which are fixed two circular plates 142. At equidistantly-spaced radii of these plates, there are positioned, at equal distances from the peripheries of the plates, pivot pins 143, which extend through both plates. Mounted on these pivot pins, there are rocking members 144. Pivoted on the same radii, at points equidistant from the center of the plates and nearer the centers

of the plates than the first-named pivots, are links 145. These links carry pins 145', which coöperate with slots in the rockers 144. The pivot pins 143 are slightly farther from the outer ends of the rockers 144 than they are from the inner face of the cylindrical flange 140. It will be seen, therefore, that when the rockers are swung so that they coöperate with the inner flange of the plate 140 they will frictionally engage the inner face of the cylindrical flange 140, and any tendency of the flange to rotate will cause an increase of the frictional engagement and will cause the plates which carry the pivots 143 to be moved around with the cylindrical flange 140. In order to bring the outer ends of the rockers 144 into contact with the inner face of the flange 140, springs are provided, which act upon the links 145, tending to rotate them about their pivots, which will cause a rotation of the rockers 144 in a direction to bring them into engagement with the flange 140. Rings 146 connect the pins 145', so that all of the links 145 and rockers 144 act together. The springs would constantly keep the rockers in contact with the flange 140, but means is provided to prevent this contact until it is desired. The flange 140 is constantly rotated, as above described. One of the rockers 144 carries a lug 147, and the housing 148 which covers the worm wheel 138 carries a pin 149, which is normally in the path of the pin 147. This pin is held in the path of the lug 147 by the action of the spring 150. Whenever, however, the pin 149 is withdrawn, the rockers spring into contact with the flange 140, and a jamming action occurs between the rockers 144, the flange 140 and the pivot pins 143, because the distance between the end of the rocker and the pivot pin is only slightly greater than the distance between the flange and the pivot pin. The rotation of the flange 140, therefore, causes the plates 142 to be carried around, and this causes a rotation of the shaft G through the extension 141 thereof. As soon as one rotation has been made, the lug 147 strikes against the pin 149, which has returned to its normal position, and the rocker 144 is moved out of contact with the flange 140 and held out of contact therewith against the action of the springs 151, and the flange 140 continues to rotate while the shaft G remains stationary until the pin 149 is again withdrawn from contact with the lug 147.

In the operation of my device, a slip of paper is placed upon the carriage and clamped thereupon by the clamping member 91. The appropriate keys 31 are pressed to limit the swinging motion of the sweeps 10 and to release the sweeps 10 to swing to such limited position. The type is now set and the article upon which the impressions

are to be made is in position. The motor bar 152 is now pressed down, and a sloping face on one member thereof coöperates with the pin 149, thereby withdrawing the pin 5 149, and permitting the constantly-rotating flange 140 to carry the shaft G around for one rotation. This single rotation of the shaft G will carry the carriage across the face of the type to its inner position, and 10 then will move the carriage back to its outer position, and the bar 131 will also be moved up and down to permit the operation of the ribbon-moving mechanism and to restore the type-positioning mechanism to normal position, as well as release whatever stop pins 15 may be in operative position. The reciprocation of the carriage operates the impressing pad, as above described.

In order to prevent, as far as possible, the 20 operation of the motor bar when the clamping member 91 is in any position except lying flat upon the carriage, I have provided a lock for the motor bar 152, which is illustrated in Figs. 11 and 14. In one of the 25 members of the motor bar, there is provided a notch 153, and mounted to reciprocate in one of the supporting plates 89 is a blocking member 154, which is adapted to be moved into and out of the notch 153 by means of a 30 link 155, which is connected to the crank arm 156. This crank arm is connected to a rock shaft 157, which is mounted in brackets 158, supported on the plate 68'. One end 157' of the rock shaft 157 has a square cross-section, 35 and mounted to slide upon this is a lever 159. A spring 160 has one end secured to one of the brackets 158, and the other end secured to the lever 159. The spring is so 40 adjusted that it will press the lever 159 to the right of Fig. 13 and will, at the same time, tend to rotate it clockwise, as shown in Fig. 12. The clockwise rotation of the lever 159 moves the locking member 154 into the notch 153. Secured to the hinged edge of 45 the clamping member 91 is a cam member 161, as shown in Fig. 12. When the clamping member 91 is swung down against the carriage, the cam 161 rotates the lever arm 159 counter-clockwise and withdraws the locking member 154 from the notch 153. 50 The motor bar may now be pressed downward, the carriage will move inward, and the cam 161 will slip off of the lever 159, and the lever 159 will swing clockwise. 55 When the carriage moves outward, the cam 161 will strike against the arm 159 and slide it out toward the end of the rock shaft 157 against the action of the spring 160, as shown in Fig. 14. The locking member 154, therefore, still remains in the notch 153, but, 60 when the clamping member is raised, the lever arm 159 will be moved to the right by the action of the spring 160 and will occupy the position shown in Fig. 13, which is in the

path of the cam member 161, so that, when 65 the clamping member 91 is again brought down upon the carriage, the member 161 will swing the lever arm 159 counter-clockwise and withdraw the locking member 154, as above described, so that the motor bar may 70 be operated.

While I have described the elements of a combination which, when they are employed together, coöperate and produce a unitary result, it is to be understood that, if any of 75 these elements shall be used separately to produce a complete and unitary result, such use in that connection is to be considered as being entirely within the scope of my invention, for, while I have described a particu- 80 lar embodiment of my invention with great detail, I do not intend that my invention shall be limited thereto, but that such modifications, variations and adaptations of the complete device or the elements of it as may 85 occur to one skilled in the art shall be considered as a part of my invention, and that my invention shall be defined by the hereunto appended claims.

What I claim and desire to secure by Letters Patent of the United States is the following:— 90

1. In a device of the class described, the combination of a type member, an article-supporting member, said members being relatively 95 movable, means for moving an article relatively to said supporting member and into instantaneous coöperation with said type member for one or more instantaneous complete printing operations during the relative 100 movement of said members and means rendering inoperative said last-named means.

2. In a device of the class described, the combination of a type member, an article-supporting member, one of said members 105 having a fixed position and the other of said members being movable in one plane, and means controlled by the movement of the movable one of said members for pressing together for instantaneous contact said type 110 member and an article supported by said supporting member for one or more instantaneous complete printing operations during relative movement of said members and 115 means for rendering inoperative said first-named means.

3. In a device of the class described, the combination of a type member, an article-supporting member, one of said members 120 having a fixed position and the other of said members being movable, means for causing contact of said type member and an article supported by said supporting member during 125 relative movement of said members, means carried by the movable one of said members for controlling said last-named means and means for rendering inoperative said first-named means.

4. In a device of the class described, the combination of a type member, an article-supporting member, one of said members having a fixed position and the other of said members being movable, means tending to cause contact of said type member and an article supported by said supporting member, a cam carried by the movable one of said members for controlling the operation of said last-named means and means rendering inoperative said first-named means.

5. In a device of the class described, the combination of a type member, an article support movable relatively thereto, spring-actuated means tending to press together an article carried by said support, and said type, a cam carried by said support and controlling the operation of said last-named means and means rendering inoperative said first-named means.

6. In a device of the class described, the combination of a type member, an article support movable relatively to said member, means tending to impress together an article carried by said support and said type member, means acting to restrain said impressing means during motion of said support in one direction, and means controlling the operation of said impressing means during motion of said support in the opposite direction.

7. In a device of the class described, the combination of a type member, an article support movable relatively to said member, means tending to impress together an article carried by said support and said type member, releasable restraining means for said last-named means and operated and released by movement of said support, and means for controlling said impressing means while it is released.

8. In a device of the class described, the combination of a type member, an article support movable relatively to said member, means tending to impress together an article carried by said support and said type member, a cam carried by said support and cooperating with said impressing means to control its operation during motion of said support in one direction, and releasable restraining means for said impressing means for restraining the operation thereof during motion of said support in the opposite direction, said restraining means being set into operation by said cam and released by the movement of said support.

9. In a device of the class described, the combination of type having normal and adjusted settings, mechanism for adjusting the setting of said type to print various characters, an article support, means for relatively moving said article support and said type and for bringing said type to its normal setting, and means operated by the rela-

tive movement of said type and support for moving an article relatively to said support to cause contact of said type and an article supported by said support.

10. In a device of the class described, the combination of type having normal and adjusted settings, mechanism for moving said type to different settings, means for holding said mechanism against movement from normal position, a series of stops operable into position for limiting the operation of said mechanism, and means independent of said mechanism for holding said stops in operated position, said mechanism-holding means and said stop-holding means being inter-related to cause one to release upon a part being brought into position for engagement by the other.

11. In a device of the class described, the combination of type having normal and adjusted settings, mechanism for moving said type to different settings, means for holding said mechanism against movement from normal position, a series of stops operable into position for limiting the operation of said mechanism, and means for holding said stops in operated position, said mechanism-holding means and said stop-holding means being inter-related to cause one to release upon a part being brought into holding engagement with the other.

12. In a device of the class described, the combination of type having normal and adjusted settings, mechanism for moving said type to different settings, a series of selectively operable stops for limiting the operation of said mechanism, means independent of said mechanism for holding an operated stop in operative position, and means for releasing said stops upon restoration of said mechanism to normal setting.

13. In a device of the class described, the combination of type having normal and adjusted settings, mechanism for moving said type to different settings, said mechanism including a spring-actuated member, a series of stops for said member, selectively operable devices for moving said stops respectively to operative position, a latch member for said devices movable to hold them in operative position, and releasable restraining means for said member and actuated by the movement of said latch member.

14. In a device of the class described, the combination of type having normal and adjusted settings, mechanism for moving said type to different settings, a series of selectively operable stops for limiting the operation of said mechanism, a latch member for holding an operated stop in operative position, and means operated by movement of said mechanism beyond normal position for releasing an operated stop.

15. In a device of the class described, the combination of type having normal and ad-

- justed settings, mechanism for moving said type to different settings, a series of selectively operable stops for limiting the operation of said mechanism, a latch member for holding an operated stop in operative position, and means for restoring said type and mechanism to normal setting and by an excess of operation releasing an operated stop.
16. In a device of the class described, the combination of type having normal and adjusted settings, mechanism for moving said type to different settings, releasable restraining means for holding said mechanism in normal position, a series of selectively operable stops for limiting the operation of said mechanism as it moves from normal position, and means for restoring said mechanism to the influence of said restraining means and by an excess of operation restoring said stops to normal position.
17. In a device of the class described, the combination of type having normal and adjusted settings, mechanism having normal and operated positions for moving said type to different settings, a series of selectively operable stops for limiting the operation of said mechanism, a latch member independent of said mechanism for holding an operated stop in operative position, and means for restoring said stops and mechanism to normal position.
18. In a device of the class described, the combination of type having normal and adjusted settings, mechanism for moving said type to different settings, releasable restraining means for holding said mechanism against movement from its normal position, selectively operable stops for limiting the operation of said mechanism, and means operable upon release of said restraining means for locking unoperated stops against operation.
19. In a device of the class described, the combination of type having normal and adjusted settings, mechanism for moving said type to different settings, a series of selectively operable stops for limiting the operation of said mechanism, a member for holding said stops in operative or inoperative position and adapted to be moved to permit change of position of said stops, and means for locking said member against movement and set into operation by movement of a stop.
20. In a device of the class described, the combination of type having normal and adjusted settings, mechanism for moving said type to different settings, a series of selectively operable stops for limiting the operation of said mechanism, a member for holding said stops in operative or inoperative position and adapted to be moved to permit change of position of said stops, and means for locking said member against movement.
21. In a device of the class described, the combination of type having normal and adjusted settings, mechanism for moving said type to different settings, a series of selectively operable stops for limiting the operation of said mechanism, latches for certain of said stops, and means holding said latches in position to fix certain of said stops against movement into operative position and set into operation upon movement of a stop to operative position.
22. In a device of the class described, the combination of type having normal and adjusted settings, mechanism for moving said type to different settings, a series of selectively operable stops for limiting the operation of said mechanism, and means for locking said stops against movement and set into operation by movement of said mechanism from initial position.
23. In a device of the class described, the combination of type having normal and adjusted settings, mechanism having normal and operated positions for moving said type to different settings including means tending to actuate said mechanism, means for releasably restraining said mechanism, selectively operable stops for limiting the operation of said mechanism, means actuated upon release of said mechanism for locking said stops in respectively operated or unoperated position, and means for restoring said mechanism to normal condition, said restoration acting to release said locking means.
24. In a device of the class described, the combination of type having normal and adjusted settings, mechanism for moving said type to different settings including means tending to actuate said mechanism, means for releasably restraining said mechanism, selectively operable stops for limiting the operation of said mechanism, and means actuated upon release of said mechanism for locking said stops in respectively operated or unoperated position.
25. In a device of the class described, the combination of type having normal and adjusted settings, mechanism for moving said type to different settings, said mechanism including a member having a normal position and being movable to operated positions, selectively operable stops for limiting the movement of said member, and means actuated upon movement of said member from and into normal position for locking said stops in respectively operated or unoperated position.
26. In a device of the class described, the combination of type having normal and adjusted settings, mechanism for moving said type to different settings, a series of selectively operable stops for limiting the operation of said mechanism, latches for holding said stops in operated or unoperated

position and being yieldable to permit said stops to move from one position to another, and a dead-lock for said latches and put into operation upon movement of said mechanism from initial position.

27. In a device of the class described, the combination of type having normal and adjusted settings, mechanism for moving said type to different settings, selectively operable stops to limit the operation of said mechanism, and latches for said stops and yieldable to permit movement of a stop, said restraining means being operated by movement of said latches.

28. In a device of the class described, the combination of type having normal and adjusted settings, mechanism for moving said type to different settings, selectively operable stops to limit the operation of said mechanism, latches for said stops and yieldable to permit movement of a stop, said restraining means being operated by movement of said latches, and a dead-lock for said latches operated upon movement of said mechanism from and to initial position.

29. In a device of the class described, the combination of type having normal and adjusted settings, mechanism for moving said type to different settings, selectively operable stops for limiting the operation of said mechanism, latches for holding said stops in operated position, and means actuated by movement of said mechanism to normal position to release said stops.

30. In a device of the class described, the combination of type having normal and adjusted settings, mechanism for moving said type to different settings, selectively operable stops for limiting the operation of said mechanism, latches for holding said stops in operated position, and means actuated by movement of said mechanism to normal position to withdraw said latches.

31. In a device of the class described, type adjustable to different settings, mechanism for moving said type to different settings, an inking ribbon positioned over the face of said type, means for producing relative movement of said type and article to be printed upon, and means operated by said mechanism for imparting a step-by-step motion to said ribbon.

32. In a device of the class described, a type member, an article-supporting carriage, mechanism for impressing together said type and an article supported by said carriage, means for controlling the operation of said impressing mechanism, and means operative during a certain portion of the relative motion of said members for rendering said last-named means inoperative to effect the impression together by said mechanism of an article supported by said carriage and said type.

33. In a device of the class described, a

type member, an article-supporting carriage member, said members being mounted for relative movement, mechanism for impressing together said type and an article supported by said carriage, a member for controlling the operation of said mechanism and moved by one of said members, and means operative during a certain portion of the relative motion of said members for rendering said member inoperative to effect the impression together by said mechanism of an article supported by said carriage and said type.

34. In a device of the class described, an article-supporting carriage, a clamp for securing an article thereto, mechanism for moving said carriage, a member movable to control said mechanism and means for preventing operation of said controlling member and dependent upon the adjustment of said clamp to open or closed position.

35. In a device of the class described, the combination of type having normal and adjusted settings, mechanism for moving said type to different settings, a series of selectively operable stops for limiting the operation of said mechanism, latches for certain of said stops, and means for holding said latches in position to fix certain of said stops against movement into operative position, said last-named means being rendered inoperative by movement of said mechanism to normal position.

36. In a device of the class described, the combination of type having normal and adjusted settings, mechanism for moving said type to different settings, a series of selectively operable stops for limiting the operation of said mechanism, latches for certain of said stops to hold them in operated position, means for holding said latches in position to fix certain of said stops against movement into operative position, said last-named means being rendered inoperative by movement of said mechanism to normal position, and means whereby any operated stop is released by movement of said mechanism beyond normal position.

37. In a device of the class described, the combination of type having normal and adjusted settings, mechanism for moving said type to different settings, a series of selectively operable stops for limiting the operation of said mechanism, a member for holding said stops in operative or inoperative position and adapted to be moved to permit change of position of said stops and means for holding said mechanism against movement from initial position, said means being rendered inoperative by movement of said holding member.

38. In a device of the class described, the combination of type having normal and adjusted settings, mechanism for moving said type to different settings, a series of selec-

tively operable stops for limiting the operation of said mechanism, a member for holding said stops in operative or inoperative position and adapted to be moved to permit change of position of said stops, means for locking said member against movement and set into operative position upon movement of said mechanism from initial position and means for holding said mechanism against movement from initial position, said means being rendered inoperative by movement of said holding member.

39. In a device of the class described, the combination of type having normal and adjusted settings, mechanism having normal and operated positions for moving said type to different settings, selectively operable stops for limiting the operation of said mechanism and means actuated upon operation of said mechanism for locking said stops in respectively operated or unoperated position and means for restoring said mechanism to normal condition, said restoration acting to release said locking means.

40. In a device of the class described, a type member, an article supporting member, said members being mounted for movement relatively to one another, means for impressing together for one or more instantaneous intervals said type member and article supported by said supporting member for a corresponding number of complete printing operations during relative motion of said members in one direction and means rendering said impressing means inoperative during relative motion of said members in another direction.

41. In a device of the class described, a type member, an article supporting member, said members being mounted for movement relatively to one another, means for impressing together said type member and an article supported by said supporting member, means controlling said impressing means to cause instantaneous impressing together of an article carried by said support for a complete instantaneous printing operation during relative motion of said members in one direction and means rendering said impressing means inoperative during relative motion of said members in another direction.

42. In a device of the class described, a type member, an article supporting member, said members being mounted for movement relatively to one another, means for impressing together said type member and an article supported by said supporting

member during relative motion of said members in one direction and means rendering said impressing means inoperative during relative motion of said members in another direction and rendered operative by relative movement of said members in said first-named direction and inoperative by relative movement of said members in another direction.

43. In a device of the class described, a supporting carriage, a clamp for securing an article thereto, mechanism for moving said carriage, a controlling member for said mechanism, a lock for said controlling member and operated by adjustment of said clamp to and from open position.

44. In a device of the class described, a type member, an article supporting member, said members being mounted for movement relatively to one another, means for impressing together said type member and an article supported by said supporting member during relative motion of said members in one direction and a latch for restraining said means, during relative motion of said members in another direction, said means being brought under the influence of and released from said latch by relative movement of said members.

45. In a device of the class described, the combination of a type member and means for relatively moving an article and said type in one direction out of contact and in a second direction to cause one or more instantaneous printing contacts during said first motion and in a third direction out of contact.

46. In a device of the class described, the combination of a type member, and means for relatively moving an article and said type in two directions out of contact and for relatively moving said type and said article into one or more instantaneous printing contacts during relative motion in one of said directions.

47. In a device of the class described, the combination of a type member, means for relatively moving an article and said type in two directions out of contact and for relatively moving said type and said article into one or more instantaneous printing contacts during relative motion in one of said directions and means rendering said means inoperative to move said type and said article into contact during relative motion in the other of said directions.

In testimony whereof, I have signed my name to this specification.

PERCIVAL DIGNAN.