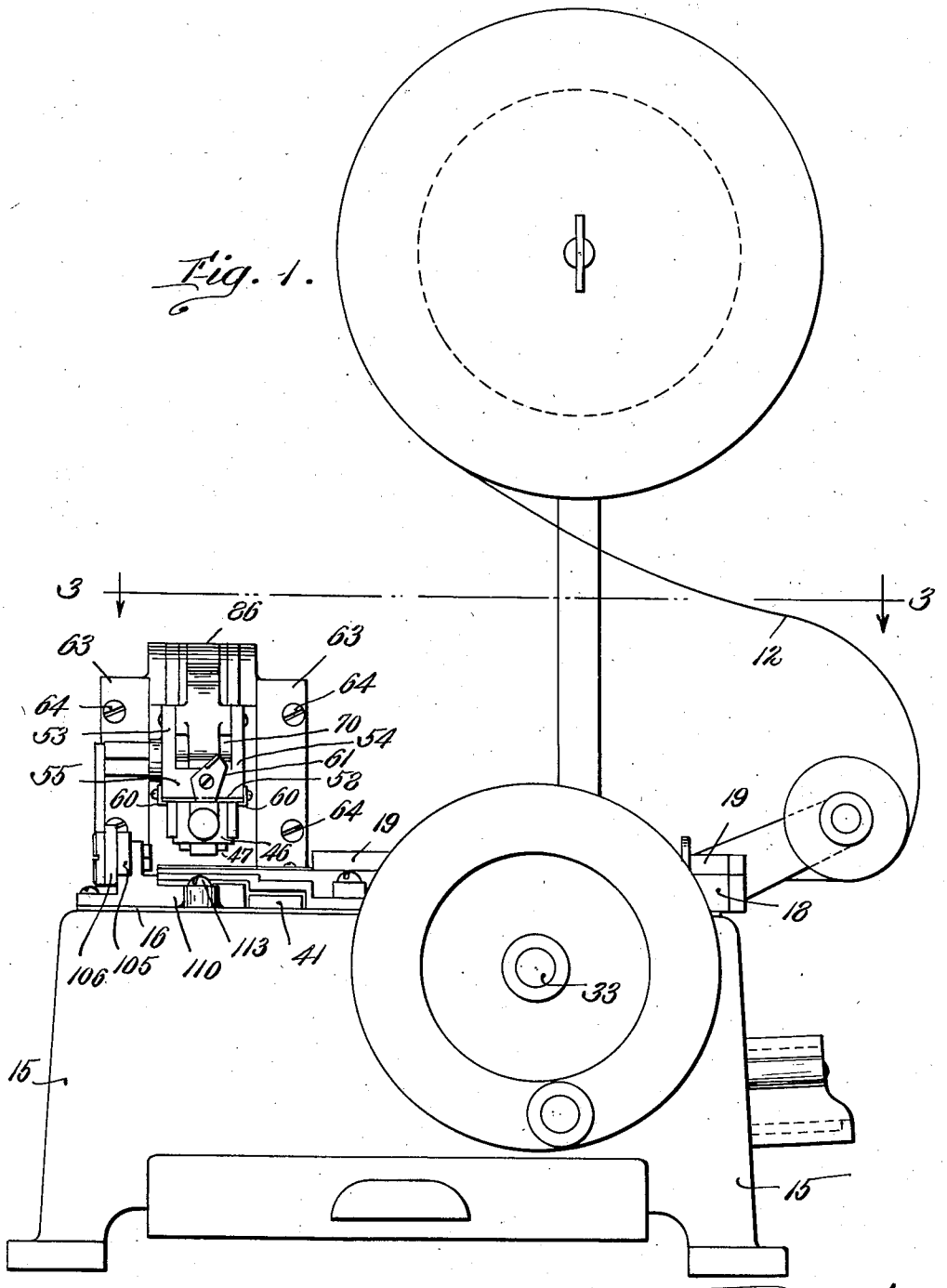
April 6, 1937. J. A. CARLSON 2,076,064

PRINTING MACHINE

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Fig. 1.



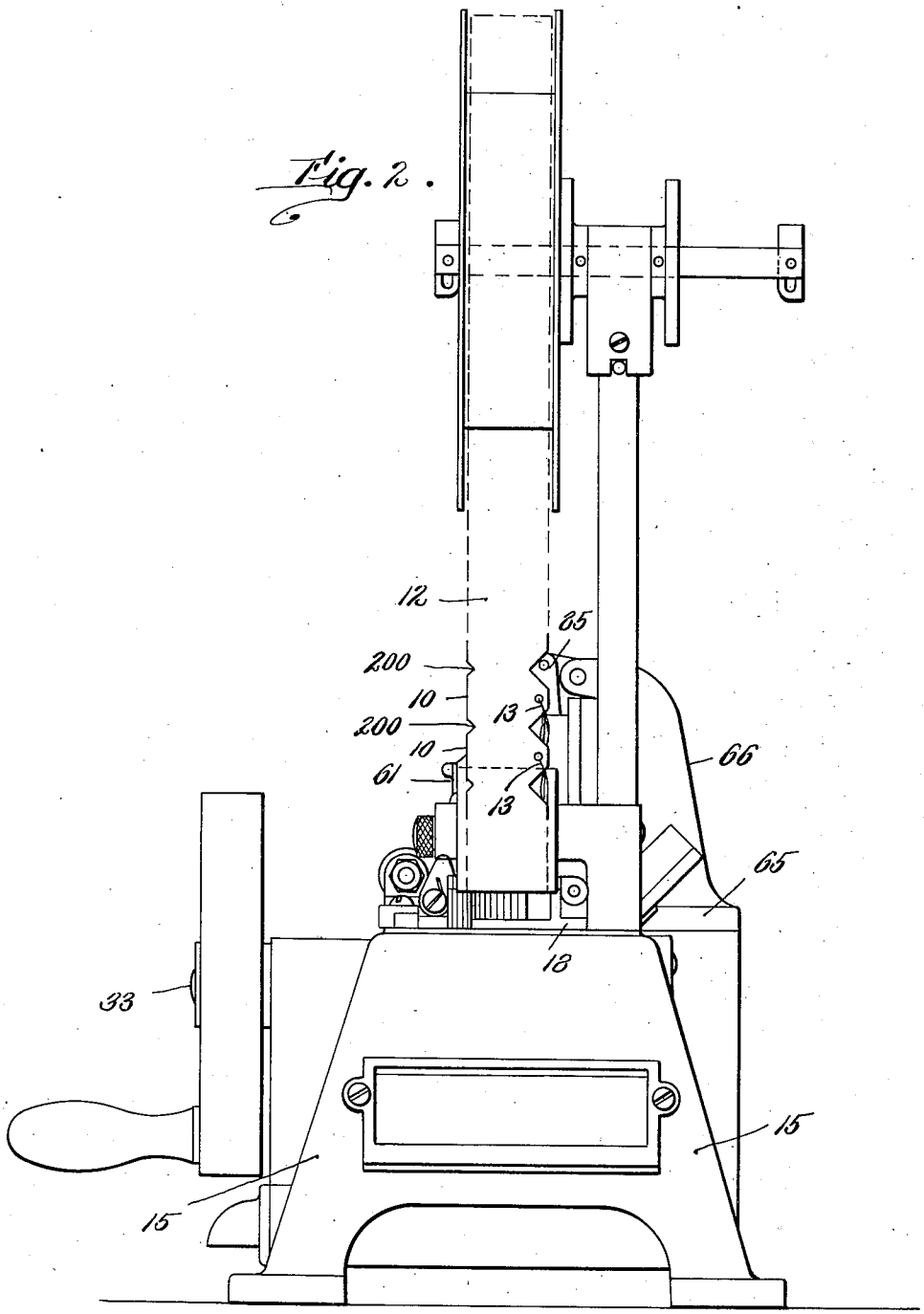
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Fig. 2.



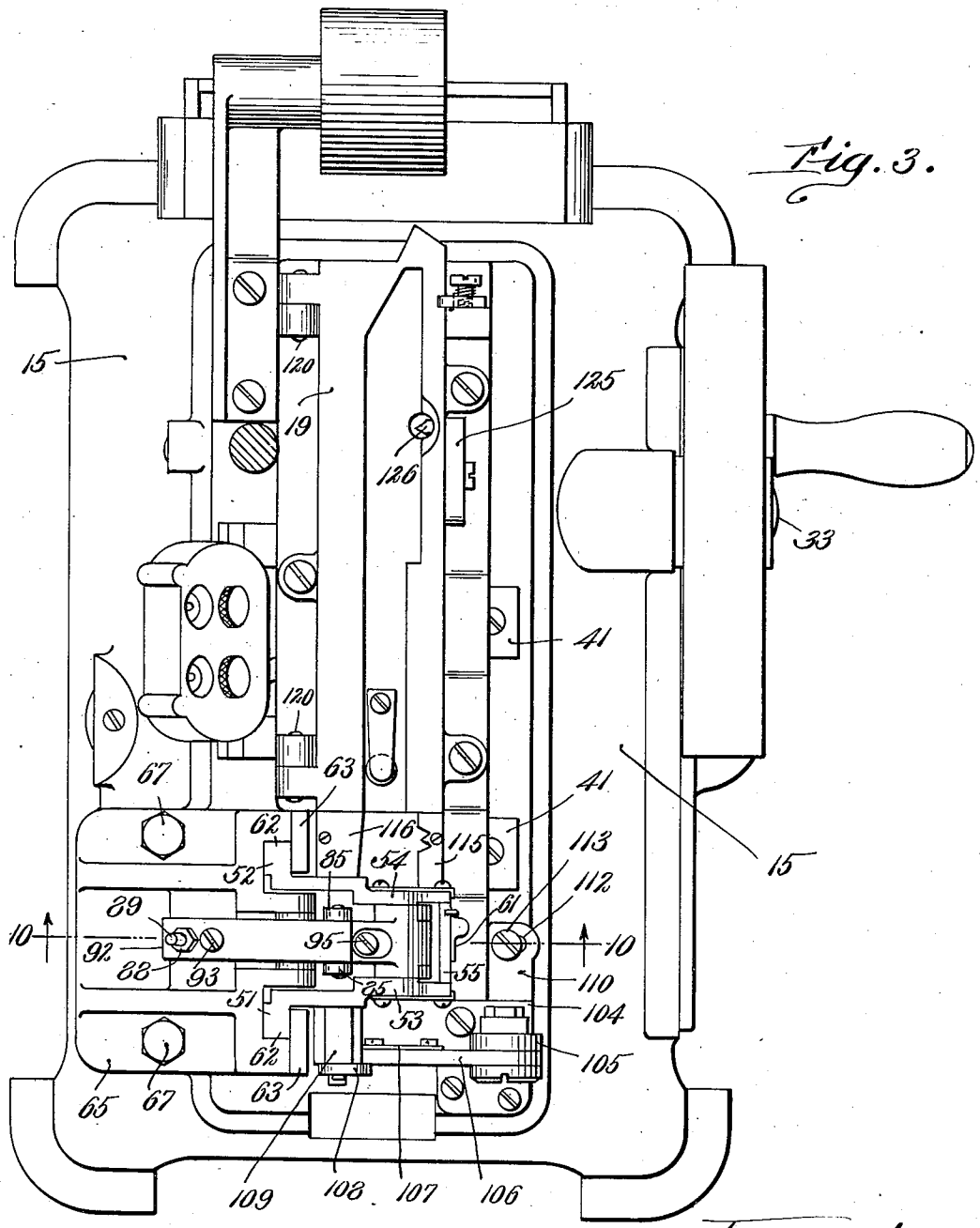
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Fig. 3.



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Fig. 4.

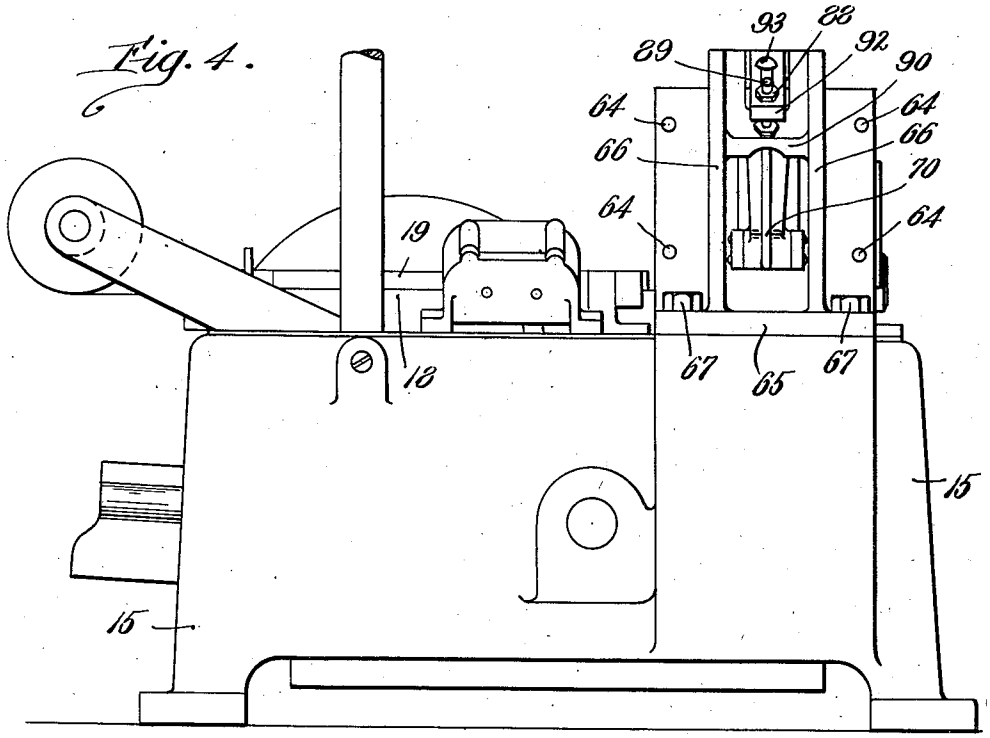
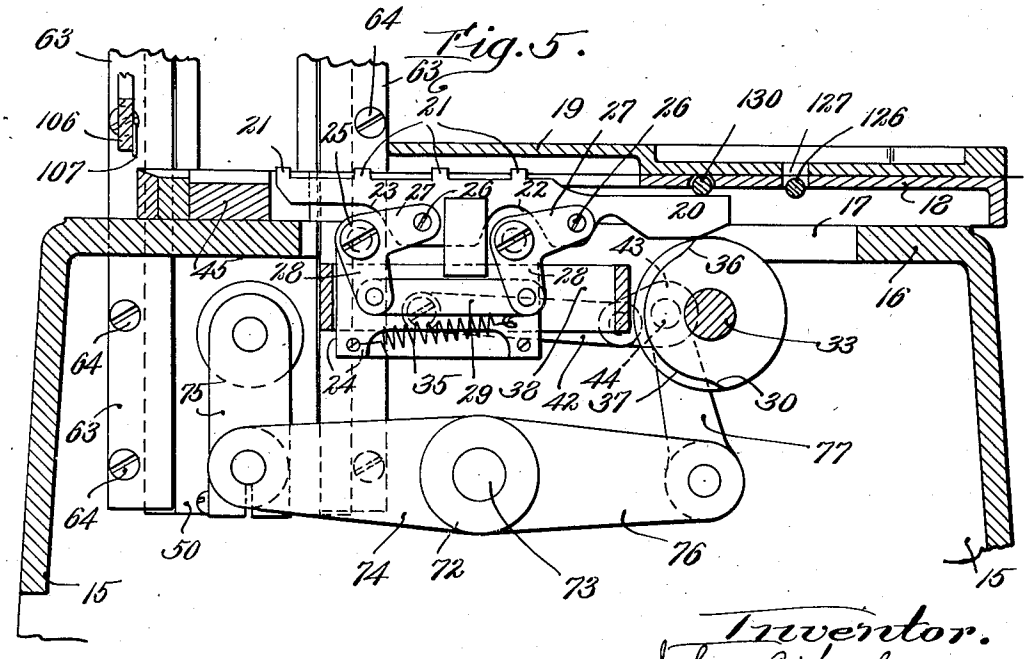


Fig. 5.



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Fig. 6.

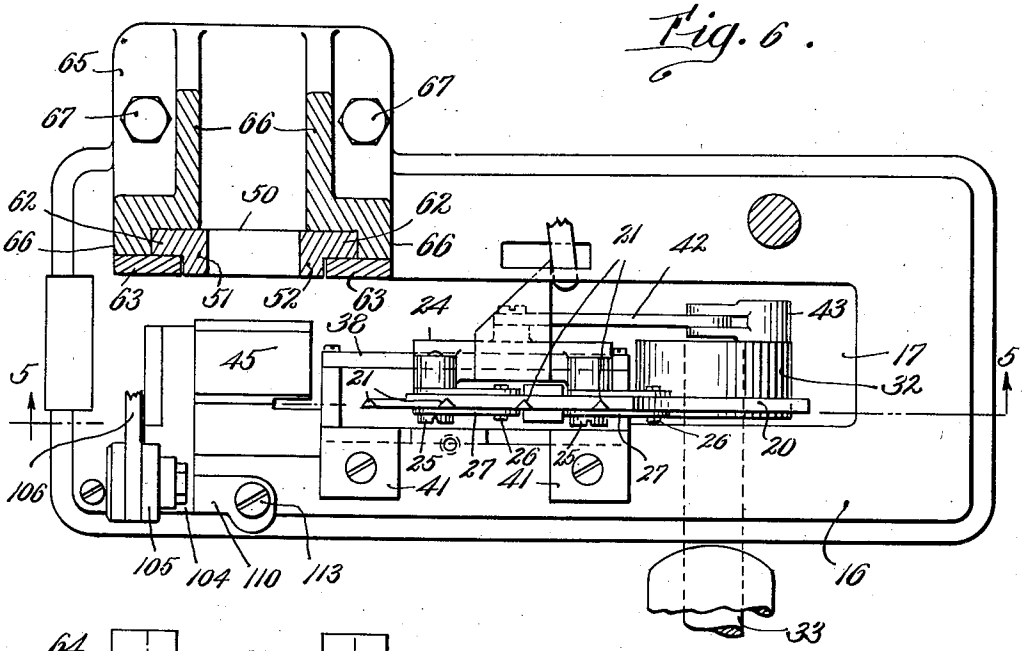
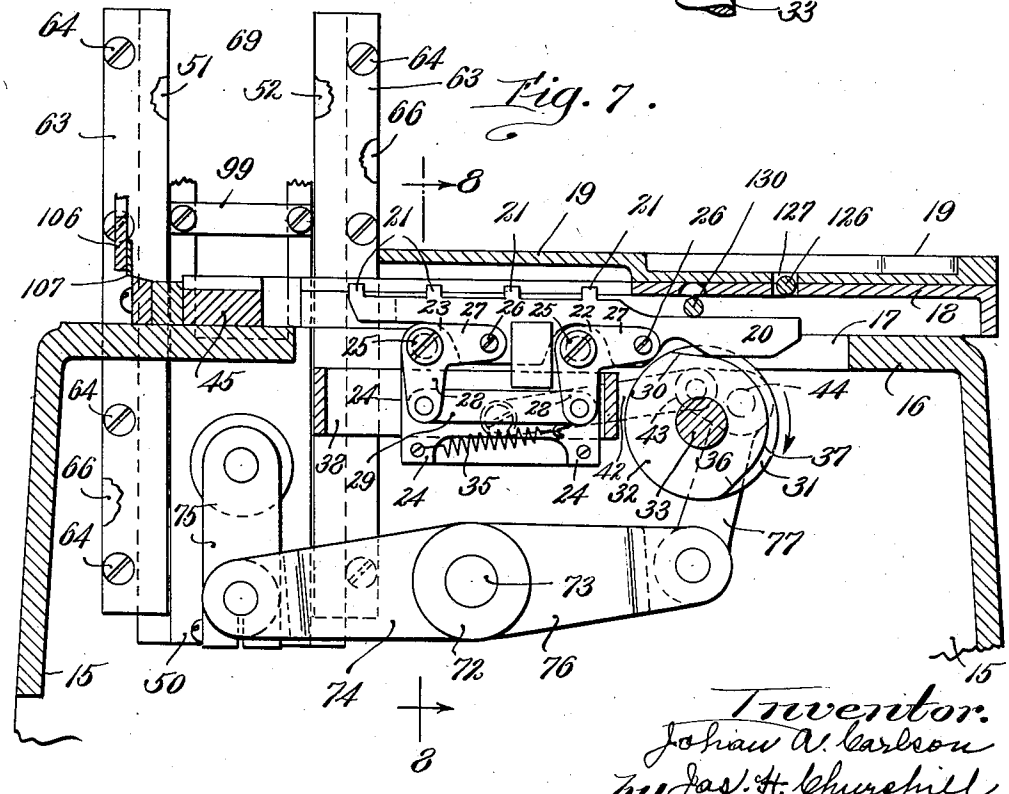


Fig. 7.



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Fig. 8.

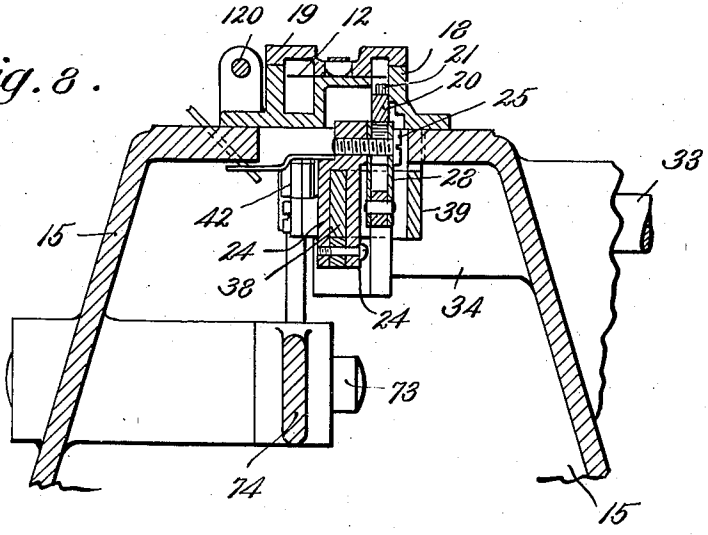


Fig. 16.

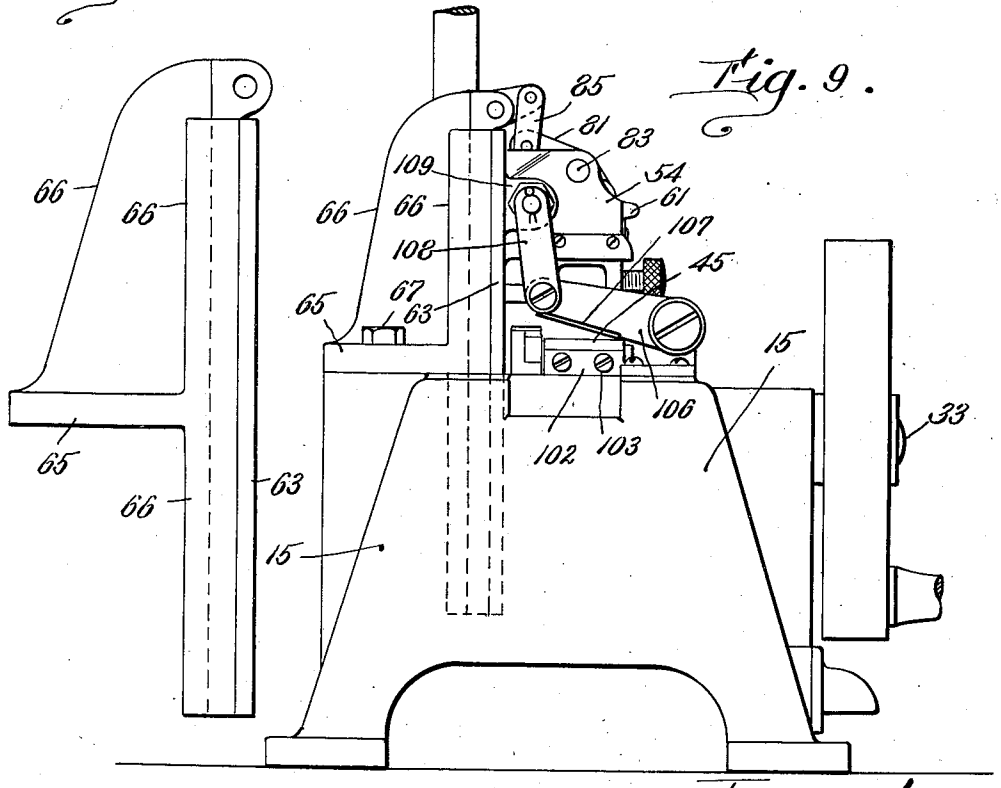


Fig. 9.

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Fig. 10.

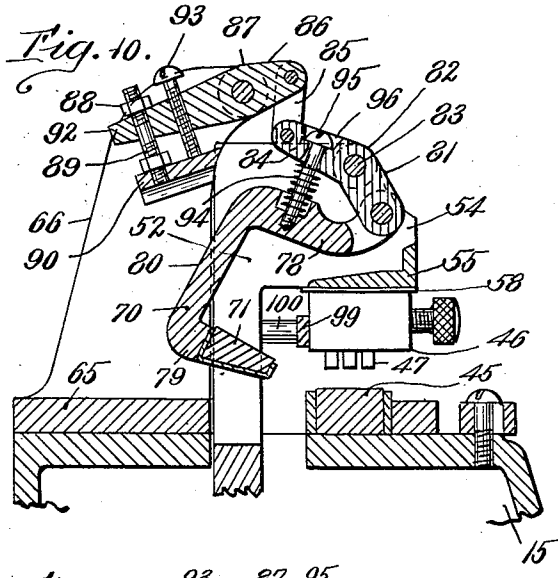


Fig. 11.

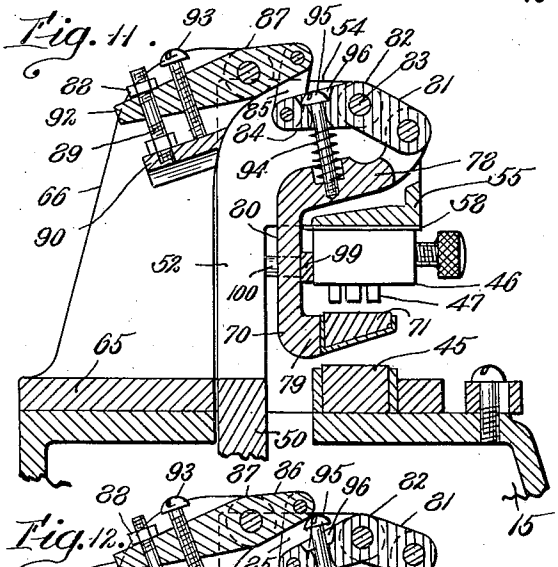


Fig. 12.

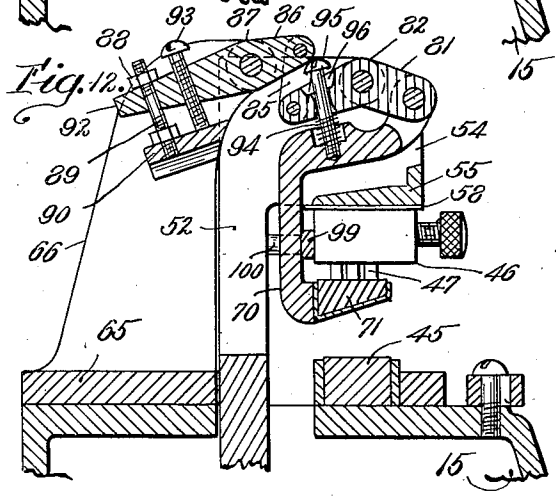


Fig. 13.

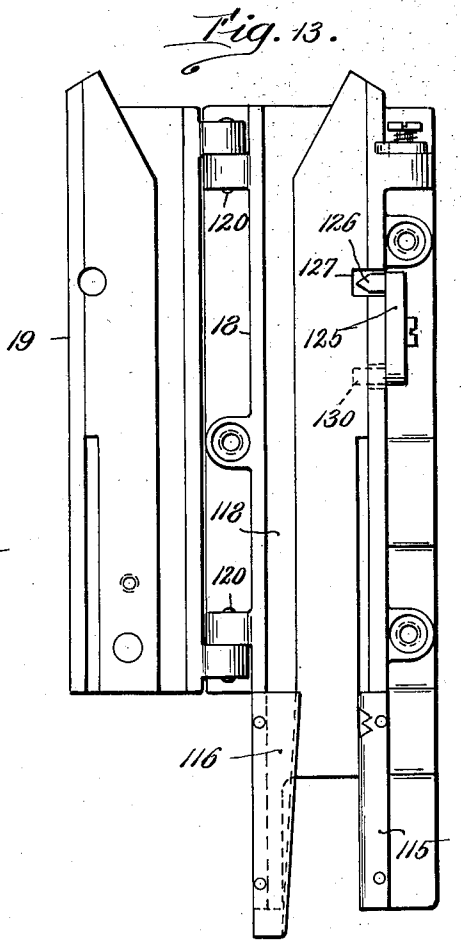


Fig. 14.

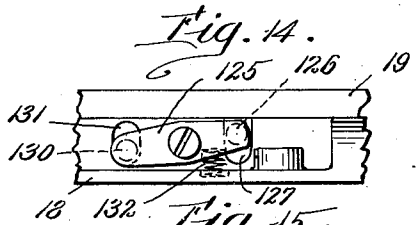
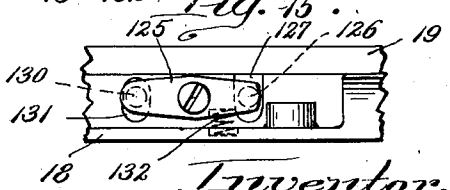


Fig. 15.



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Patented Apr. 6, 1937

2,076,064

UNITED STATES PATENT OFFICE

2,076,064

PRINTING MACHINE

Johan A. Carlson, Ashland, Mass., assignor to
Lucy T. Pratt, Ashland, Mass.

Application July 5, 1935, Serial No. 29,876

12 Claims. (Cl. 101—318)

This invention relates to a machine for printing tags in strip form, of the general character of the machine shown and described in United States patent to Albert H. Ray, No. 1,318,108 granted October 7, 1919.

The present invention has for an object to provide a superior machine of the character referred to.

To this end the machine is provided with an improved printing mechanism for printing the tags in the form of a strip and especially tags strung with strings.

The printing mechanism is provided with an inking pad, which is movable into and out of the path of movement of the chase or type carrier, and is also movable when in the said path in the direction of the length of said path and toward the type carrier.

The machine is also provided with a feed mechanism for the tag strip which is correlated with relation to the printing mechanism, so as to permit the tag strip to be fed into position to be printed by a printing mechanism having an inking pad movable in two directions substantially at right angles to each other, as will be described.

The machine is further provided with an improved feed mechanism for the tag strip and with an improved guide for the tag strip as will be described.

The machine is further provided with an improved cutting mechanism for severing tags from strips of different widths as will be described.

These and other features of this invention will be pointed out in the claims at the end of this specification.

In the accompanying drawings:

Fig. 1 is a front elevation of a machine embodying this invention;

Fig. 2, an end elevation of the machine shown in Fig. 1, looking toward the left;

Fig. 3, a section on the line 3—3, Fig. 1, showing the main portion of the machine in plan;

Fig. 4, a rear elevation of the machine shown in Fig. 1;

Fig. 5, a vertical section showing the mechanism for feeding the tag strip in its operative and forward position, the section being taken on the line 5—5, Fig. 6;

Fig. 6, a detail in section and plan showing the feed mechanism for the tag strip;

Fig. 7, a vertical section on the line 5—5, Fig. 6, showing the feed mechanism and a part of the printing mechanism;

Fig. 8, a vertical section on the line 8—8, Fig. 7, looking in the direction of the arrow thereon to still further show the feed mechanism;

Fig. 9, an end elevation of Fig. 1, looking toward the right;

Fig. 10, a vertical section on the line 10—10, Fig. 3, showing the printing mechanism with the inking member in its withdrawn position;

Fig. 11, a view like Fig. 10, showing the inking member in its forward position between the printing members;

Fig. 12, a view like Fig. 11, showing the inking member elevated and in its operative position in contact with the type;

Fig. 13, a detail in plan of the guide for the tag or strip, with the cover member turned back;

Fig. 14, a detail in elevation showing the tag strip-holding device in its elevated or operative position;

Fig. 15, a view like Fig. 14, showing the holding device in its lowered or inoperative position, and

Fig. 16, a side elevation of the guide for the reciprocating type carrier.

The machine herein shown is designed to print the individual tags 10 of a strip 12 of tags, which will be hereinafter referred to as the tag strip. The tags 10 may and preferably will be strung with loops 13 of string.

The tag strip 12 is intermittently fed in a horizontal path through a guideway to a vertically arranged printing mechanism, and each tag after being printed is cut off from the tag strip when a succeeding tag of the strip is being printed. The feeding mechanism for the tag strip and the movable members of the printing mechanism are operated from a common shaft provided with a cam disk which controls the feed of the tag strip. The printing mechanism is provided with an inking device which is movable with the reciprocating type carrier and in the present instance is also movable into and out of the path in which the type carrier is moved, so as to position the inking device below the type, and when in this position the inking device is moved toward the type chase to ink the type after each printing operation.

The operative parts of the machine are supported by a hollow base 15 having a top plate 16 provided with a slot 17 covered by the lower member 18 of a guideway for the tag strip, the upper member of which is a cover plate 19 hinged at 120 to the lower member 18.

The tag strip 12 is fed forward through the guideway by a feed mechanism comprising a

feed bar 20 provided at its front end with a plurality of teeth or projections 21, which are hereinshown as substantially V-shaped in cross section to enter shallow V-shaped notches 200 in one edge of the tag strip.

The teeth or projections 21 are spaced apart the length of a tag, so that a plurality of teeth engage the tag strip when the latter is being fed forward.

The feed bar 20 is supported by bell crank levers 22, 23, which are pivoted to a reciprocating carriage 24 by screws 25. The feed bar 20 is pivotally connected by screws 26 with horizontal arms 27 of the bell crank levers, whose vertical arms 28 are connected by a link 29. The feed bar 20 reciprocates with the carriage 24 and is bodily moved upwardly with relation thereto from the position shown in Fig. 7 to that shown in Fig. 5, by means of a cam or inclined surface 30 at one end of a recess 31 in the periphery of a disk 32 fast on a shaft 33 mounted in a boss 34 (see Fig. 8) on a side wall of the hollow base.

The feed bar 20 is moved downward from the position shown in Fig. 5 to that shown in Fig. 7 by a spring 35 having one end attached to the carriage 24 and its other end to the link 29. This downward movement of the feed bar 20 by the spring 35 is permitted and controlled by a cam or inclined surface 36 at the other end of the recess 31. The cams 30, 36 are connected by a circular bottom wall 37 of the recess 31, upon which the tail piece of the feed bar rides in its lowered position.

The feed carriage 24 is mounted to slide on a side bar 38 of a supporting frame 39 for said carriage, which frame is hung in the slot or opening 17 in the top plate 16 of the hollow base, by means of flanges 41 secured to said top plate (see Fig. 6).

The feed carriage 24 is connected by a link or rod 42 to a crank 43 mounted on a stud 44 eccentrically located on the cam disk 32 (see Figs. 5, 6 and 7).

The feed bar 20 when in its elevated position shown in Fig. 5 feeds the tag strip forward into position to be printed by a printing mechanism having a stationary platen 45 supported by the top plate of the base, and over and upon which the tag strip is fed by the feed bar 20.

The stationary platen has co-operating with it a chase or form 46 for the type 47. The type chase 46 is reciprocated in a vertical path substantially at right angles to the horizontal direction in which the feed bar 20 is moved, and for this purpose the type chase 46 is attached to a vertically reciprocating type carrier, hereinshown as a plate or bar 50 having side arms 51, 52 extended upwardly therefrom and spaced apart, (see Fig. 6).

The side arms 51, 52 are provided at their upper ends with forwardly projecting extensions or plates 53, 54, connected at their lower portions by a cross bar or member 55. The side plates 53, 54 and cross bar 55 form a head for the reciprocating type carrier, to which the type chase 46 may be removably secured.

In the present instance the type chase 46 is provided with a top plate 58 (see Figs. 1, 10, 11 and 12), which plate projects beyond the sides of the chase to rest upon the guide bars 60 secured to the side plates 53, 54 of the reciprocating type carrier. The type chase 46 may be locked to the head of the reciprocating type carrier by a lever 61 pivoted to the cross bar 55 of said head (see Fig. 1).

The reciprocating type carrier is provided with side flanges 62 (see Figs. 1 and 6), which are movable in guideways formed by bars 63 secured as by screws 64 to a bracket having a horizontal member 65 and a vertical member 66.

The horizontal member 65 of the bracket rests upon and is secured by screws or bolts 67 to the top plate 16 of the base, and the vertical member 66 extends above and below the horizontal member 65 of the bracket, the lower portion being in the form of a plate which extends down into the hollow base, and the upper portion being in the form of arms which extend from the lower portion above the top plate and are separated by a space 69, in which is movable a lever 70 carrying an inking device in the form of a pad 71 with which the type 47 of the chase are inked after each tag is printed, as will be described.

The type carrier is reciprocated vertically by a rocking lever 72 (see Figs. 5 and 7), which is mounted within the hollow base on a pivot pin or stud 73 and has one arm 74 connected by a link 75 with the type carrier and has its other arm 76 connected by a link 77 with the crank pin or stud 44 on the cam disk 32.

Rotation of the shaft 33 and the cam disk 32 fast thereon effects reciprocation of the feed bar carriage 24 in a horizontal direction and also effects reciprocation of the type carrier in a direction substantially at right angles thereto.

Provision is made for moving the lever 70 carrying the inking device or pad 71, so that the latter is not only moved into and out of the path of the type chase 46 but is also moved in the direction of the length of said path and toward and from the type chase, so as to press the inking pad firmly against the type carried by the chase and thereby ink the latter in an efficient manner.

To this end, the lever 70 is preferably made so as to straddle the type chase on the forward movement of the lever. The lever 70 is provided with an upper arm 78 and a lower arm 79 extended in the same direction from the ends of an intermediate substantially straight portion 80 (see Figs. 10, 11 and 12).

The upper arm 78 is pivotally connected at its end to an arm 81 of a rocking lever 82 mounted on a pivot pin 83 supported by the side plates 53, 54 of the head of the type carrier.

The rear arm 84 of the rocking lever 82 is connected by links 85 with the front arm 86 of a lever 87, which is normally secured in fixed relation to the stationary bracket 65, 66 by a nut 88 on a bolt 89 fastened to a cross bar 90 connecting the arms of the bracket 65, 66.

The rear arm 92 of the lever 87 carries a screw 93 which is engaged with the cross bar 90 to turn the lever 87 when released from the bolt 88, so as to adjust the inking pad 71 with relation to the type chase 46 and enable the inking pad to be positioned below and out of contact with the type when the inking lever 70 is moved forward in the path of the type chase, as shown in Fig. 11.

Provision is made for arresting the lever 70 in its forward movement when the inking pad 70 has been moved below the type chase in proper position with relation to the type to effect inking of the type by movement of the lever 70 upwardly in the path of the type chase. Provision is made for connecting the upper arm 78 of the lever 70 with the rear arm 84 of the rocking lever 82 so that the two levers may be moved as one piece about the pivot pin 83 for the rocking lever as a center, when the lever

70 is oscillated from the position shown in Fig. 10 to that shown in Fig. 11 and vice versa.

For this purpose, a spring 94 is interposed between the arms 78, 84 and is mounted on a screw 95, which is extended through the hole 96 in the rear arm 84 of the rocking lever and is fastened to the upper arm 78 of the lever 70.

Normally the spring 94 acts to force the arms apart, and the distance they are separated is governed by the head on the screw 95, which head is engaged with the arm 84 of the rocking lever 82 as shown in Fig. 10.

On the upward movement of the reciprocating type carrier, the two levers 70, 82 turn on the pivot pin 83 as a center, and the rear arm 84 of the rocking lever 82 moves the lower ends of the links 85 into the position shown in Fig. 11 when the pad-carrying lever 70 is arrested by a cross bar 99 secured to studs 100 projecting from the side arms 51, 52 of the reciprocating type carrier.

The cross bar 99 is engaged by the intermediate portion 80 of the lever 70 (see Fig. 11). On further upward movement of the type carrier, the lever 70 is lifted and its upper arm 78 is moved toward the rear arm 84 of the rocking lever 82, thereby compressing the spring 94 and moving the screw 95 up through the hole 96 in the arm 84 as shown in Fig. 12.

On this upward movement of the type carrier, the pad-carrying lever 70 is moved lengthwise of the path in which the type chase is moved, until the inking pad 71 is firmly pressed up against the type 47 and inks the same in an efficient manner.

The inking pad 71 is firmly pressed against the type at or about the end of the upstroke of the reciprocating type carrier, and thereafter the latter is moved downward. On the initial downward movement of the type carrier, the lever 70 is moved downward in a substantially straight path until the inking pad has been lowered away from the type 47 and into substantially the position shown in Fig. 11, whereupon the levers 70, 82 are moved as one piece from the position shown in Fig. 11 to that shown in Fig. 10, on the further downward movement of the type carrier.

When the levers have been moved into the position shown in Fig. 10, the inking pad is out of the path of movement of the type chase, and the latter is free to continue to be moved downward until it meets a tag resting on the platen 45 to print the same.

As soon as the tag has been printed, the type carrier is again moved upwardly and the tag strip is fed forward to position the printed tag with relation to a cutting mechanism by which the printed tag is severed from the tag strip on a succeeding printing operation of the machine.

In the present instance the cutting mechanism comprises a stationary knife 102 secured as by screws 103 (see Fig. 9) to a supporting member comprising a block 104 (see Fig. 3) secured to the top plate 16 of the base. The block 104 is provided with an ear 105 to which is pivoted a lever 106 having detachably secured to it a movable knife 107. The lever 106 is connected by a link 108 to a stud 109 affixed to the side plate 53 of the head of the reciprocating type carrier (see Fig. 9).

The block 104, to which the stationary knife 102 is secured, is movable toward and from the reciprocating carrier to adjust the movable knife with relation to the width of the tag strip.

The adjustment of the knife carrier or block 104 is effected by providing an arm 110 of the block with a slot 112 (see Fig. 3) through which is extended a screw 113, which engages the top plate of the base and is effective to secure the block in its adjusted position.

The cams 30, 36 on the cam disk 32 are correlated with relation to the mechanism for reciprocating the feed bar carriage and the carrier for the type chase, in such manner as to effect the following results on the forward stroke of the feed carriage; namely, to move the type carrier on its upward stroke, move the inking device below the type, raise the inking device into contact with the type, lower the type carrier and inking device, move the latter out of the path of the type chase and lower the feed bar out of engagement with the tag strip, and on the return stroke of the feed carriage to move the type chase down, print the tag below it, effect the initial upward movement of the type carrier, elevate the feed bar to engage the tag strip and feed the same and print the next succeeding tag.

This cycle of operations is effected on each revolution of the shaft 33 and the cam disk 32 mounted thereon.

The bottom member 18 of the guideway is provided beyond the cover member with a straight member 115 on one side and an inclined member 116 on the other (see Fig. 13), the member 115 being employed to hold the tag strip 12 from being lifted up on its movement toward the platen 45, and the inclined member 116, which is located above the slot 118 in which the loops 13 of string are traveling, is for the purpose of holding down the tag strip and also to carry the loops 13 in the channel laterally away from the platen 45, so as to avoid the possibility of the knife 107 cutting the loops of string.

The rotation of the cam shaft 33 effects the raising and lowering of the movable knife 107.

The inking device is preferably made as a pad, as the pad can be saturated with the ink, and when engaged with the type covers the latter in a smooth and uniform manner, with the result that a very superior and sharply defined printing effect is obtained, because of the even distribution of the ink on the type, and as a result of this distribution the inscription printed on the tag with the machine hereinshown is sharply defined and is not liable to be blurred and indistinct. With the machine inexperienced operators can effect a proper printing of the tag without knowledge of the printing art.

Provision is made for holding the tag strip stationary when the feed bar 20 is in its lowered position, shown in Fig. 7, and to this end the lower member 18 of the guideway has pivoted to it a lever 125 (see Figs. 13, 14 and 15), said lever having at one end a V-shaped pin 126 which is vertically movable in a slot 127 in the bottom wall of the guideway and is adapted to enter the notches 200 in the side edge of the tag strip.

The lever 125 at its rear end is provided with a second pin 130 which is vertically movable in a slot 131 in the side wall of the guide member 18 and is designed to engage the upper surface of the tail piece of the feed bar after the manner represented in Figs. 5 and 7.

When the feed bar 20 is elevated by the cam 30, the lever 125 is turned from the position shown in Fig. 14 into that shown in Fig. 15 and at such time the holding pin or projection 126 is lowered out of engagement with the notch 200

in the tag strip and the latter is free to be fed forward by the feed bar.

This position of the holding pin is represented in Fig. 5. When the feed bar is lowered the lever 125 is turned by a spring 132 so as to raise the V-shaped holding pin 126 and engage it with a notch 209 of the tag strip, thereby holding the tag strip from being moved accidentally and its position disturbed with relation to the feed bar and printing mechanism.

What is claimed is:

1. In a machine of the character described, in combination, a printing mechanism having a printing member, a reciprocating carrier for said printing member, and an inking device for said printing member movable into and out of the path of movement of said reciprocating printing member and also movable toward and from said reciprocating printing member when in the path of the latter to effect inking of said printing member.

2. In a machine of the character described, in combination, a printing mechanism having a printing member, a reciprocating carrier for said printing member, an inking device for said printing member movable into and out of the path of said reciprocating printing member, means to arrest movement of the inking device in said path to position the inking device below and out of contact with said printing member, and means for effecting movement of said inking device in the path of movement of said printing member to contact with said printing member.

3. In a machine of the character described, in combination, a printing mechanism provided with a stationary platen, a type chase co-operating with said platen, a reciprocating carrier for said type chase to move the type chase toward and from the said platen, an inking device, a lever carrying said inking device and connected with said reciprocating carrier to enable the inking device to be moved laterally with relation to the path in which the said chase is reciprocated and to enable said inking device when in said path to be moved in the direction of the same and effect inking of the type carried by said chase.

4. In a machine of the character described, in combination, a printing mechanism provided with a stationary platen, a type chase co-operating with said platen, a reciprocating carrier for said type chase to move the type chase toward and from the said platen, an oscillating lever connected with said reciprocating carrier and provided with an arm capable of being interposed between said chase and platen, an inking device carried by said arm, a rocking lever pivoted to the reciprocating carrier and having an arm pivotally connected with said oscillating lever, a stationary member, a link connecting the second arm of said rocking lever with said stationary member, and a spring interposed between the second arm of the rocking lever and said oscillating lever to enable the oscillating lever to be moved as one piece with said rocking lever and move the inking device into and out of the path of movement of said chase and to enable the oscillating lever to be moved with relation to the rocking lever so as to engage the inking device with the type carried by said chase.

5. In a machine of the character described, in combination, a printing mechanism having, in combination, a type chase, a reciprocating carrier therefor, an inking device for the type carried by said chase, an oscillating lever carrying said inking device, means to arrest movement of said oscillating lever when the inking device is positioned in the path of movement of said chase, and means connecting said oscillating lever with said reciprocating chase carrier to move the inking device toward and from said type chase.

6. In a machine of the character described, in combination, a printing mechanism having a type chase, a reciprocating carrier for said type chase, an inking device for the type, and means movable with said reciprocating carrier for moving said inking device into and out of the path of movement of said type chase and also toward and from said chase when in the path thereof, a feed bar for engaging a tag strip, a reciprocating carriage for said feed bar, a rotatable shaft, a cam disk on said shaft, means connecting said cam disk with said carriage to effect reciprocation of said carriage and feed bar, means for connecting said cam disk with said reciprocating chase carrier to effect reciprocation of the latter in a path substantially at right angles to the path in which the feed bar carriage is reciprocated, and cams on said cam disk to raise the feed bar into engagement with the tag strip and to permit said feed bar to be lowered and disengaged from said tag strip, said cams being correlated with relation to said reciprocating means for the feed bar carriage and the chase carrier to raise the type carrier, move the inking device below the type, raise the inking device into contact with the type, lower the type carrier and inking device, move the latter out of the path of the type chase, and lower the feed bar on the forward stroke of the feed carriage; and on the return stroke of the feed carriage to move the type chase down and print the tag below it, then effect the initial upward movement of the type carrier and elevate the feed bar to engage the tag strip, feed the same and print the next succeeding tag.

7. In a machine of the character described, in combination, a guideway for a tag strip, a feed bar movable up into said guideway and lengthwise thereof, and a holding device for said tag strip movable by said feed bar out of engagement with said tag strip.

8. In a machine of the character described, in combination, a type carrier reciprocating in a vertical direction, and an inking device for said type movable into and out of the path of said type carrier and also movable in the path of said type carrier and operatively connected with said type carrier to be actuated thereby.

9. In a machine of the character described, in combination, a printing mechanism having members, a reciprocating carrier for one of said members, an inking device for said reciprocating printing member, and means connecting said inking device with said reciprocating carrier to effect movement of said inking device into and out of the path of movement of said reciprocating printing member and also to effect movement of said inking device lengthwise of said path and into contact with the printing member while in said path.

10. In a machine of the character described, in combination, a printing mechanism having a reciprocating type carrier, and an inking device movable with the type carrier and also movable into and out of the path of the type carried by said type carrier, a tag strip feed mechanism having a carriage reciprocating in a direction substantially at right angles to that in which the type carrier is reciprocated, a feed bar movable with said carriage and also bodily movable

with relation thereto, a cam disk co-operating with said feed bar and connected with said reciprocating carriage and type carrier to feed a tag strip to the printing mechanism, print the same, and ink the type after each printing operation.

11. In a machine of the character described, in combination, a printing mechanism having members, a bodily movable carrier for one of said printing members to reciprocate the latter toward and from the other of said printing members, an inking device movable into and out of the path in which the bodily movable printing member is reciprocated, and movable lengthwise of said path into and out of engagement with said reciprocating printing member while in said path, and means connecting said inking device with said bodily movable carrier for effecting said movements of said inking device.

12. In a machine of the character described, in combination, a vertically slidable type carrier, a type chase carried by said slidable carrier, a lever pivoted intermediate its ends to said carrier, an inking lever pivotally connected with one arm of said lever, a stationary device, a link connecting the other arm of said lever with said stationary device, and yielding means interposed between said inking lever and the other arm of the lever pivoted to said slidable carrier.

JOHAN A. CARLSON.

CERTIFICATE OF CORRECTION.

Patent No. 2,076,064. April 6, 1937.

JOHAN A. CARLSON.

It is hereby certified that the name of the assignee in the above numbered patent was erroneously described and specified as "Lucy T. Pratt" whereas said name should have been described and specified as Lucy F. Pratt, of Ashland, Massachusetts, as shown, by the records of assignments in this office; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 24th day of August, A. D. 1937.

Leslie Frazer

Acting Commissioner of Patents.

(Seal)