Oct. 15, 1940. M. C. TAYLOR 2,218,011

PRINTING PLATE

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Fig. 10.

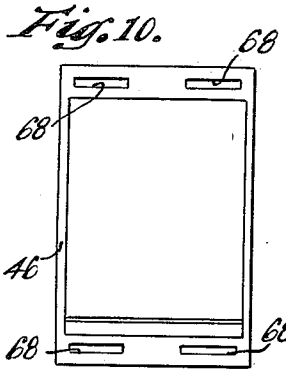


Fig. 1.

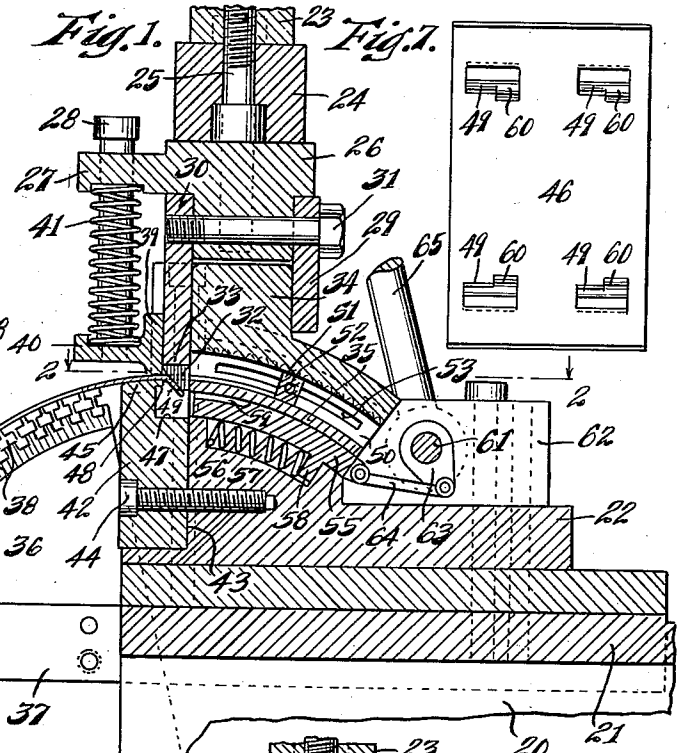


Fig. 7.

Fig. 6.

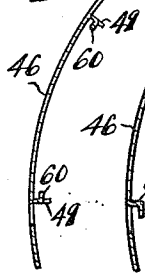


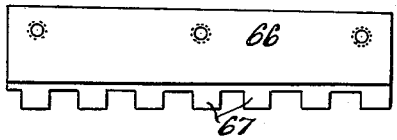
Fig. 15.



Fig. 11.



Fig. 9.



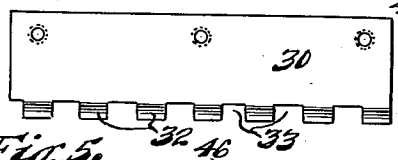


Fig. 5.

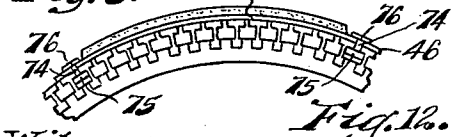
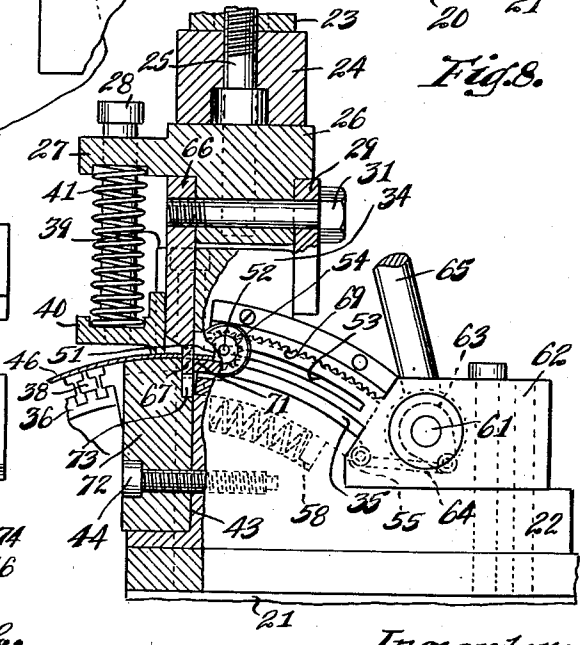


Fig. 12.

Fig. 8.



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PRINTING PLATE

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Fig. 2.

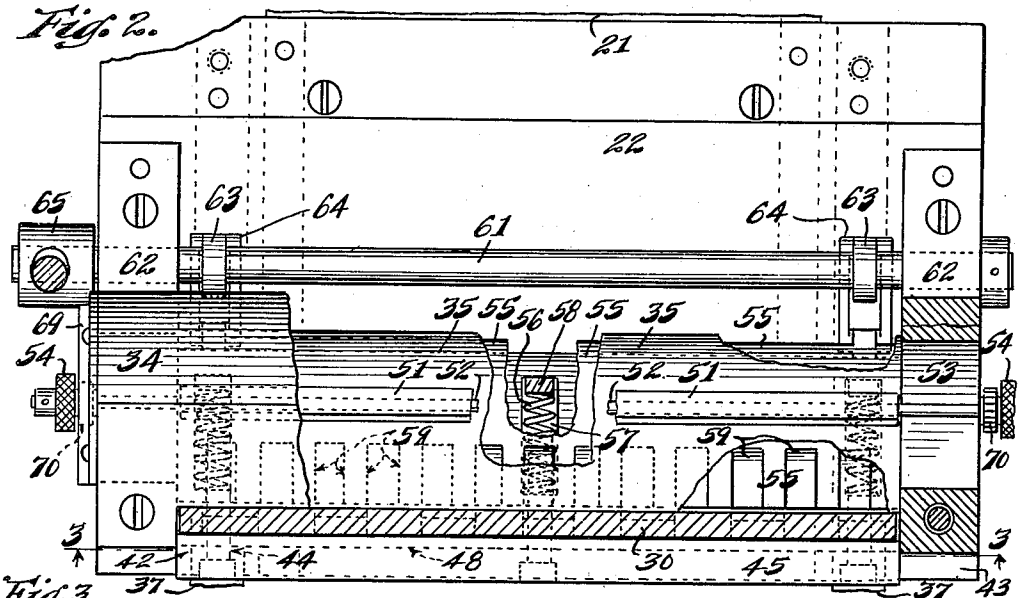


Fig. 3.

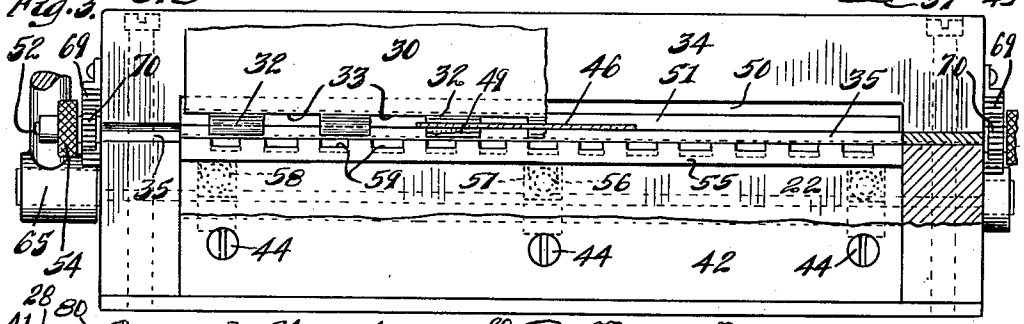


Fig. 13.

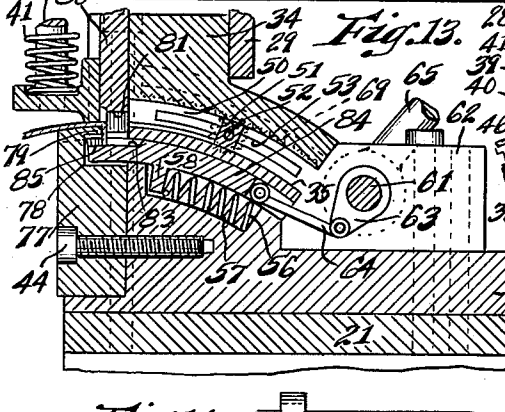


Fig. 4.

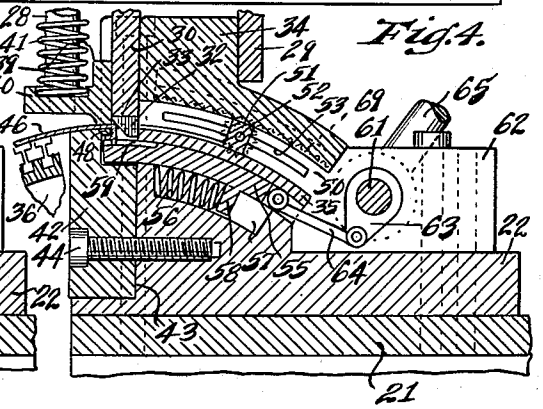
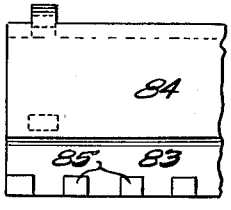


Fig. 14.



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Patented Oct. 15, 1940

2,218,011

UNITED STATES PATENT OFFICE

2,218,011

PRINTING PLATE

Milton C. Taylor, Chicago, Ill., assignor to Partridge & Anderson Company, Chicago, Ill., a corporation of Illinois

Application June 1, 1938, Serial No. 211,242

9 Claims. (Cl. 101—378)

This invention relates to printing plates and more particularly to that type of plate used for mounting electro-plates or vulcanized rubber cuts bearing advertising matter or lines of printing and designed to be mounted on the drum or segment of small printing machines and has particular reference to the subject matter of my application for patent on Printing plates and method and apparatus for producing same, executed of even date herewith.

Heretofore it has been the practice to sever the ends of the plate perpendicularly to the side edges without reference to the type or printed matter, and this has been done in a more or less haphazard manner with the result that the ends of the plate would not be parallel with the lines of printing or the means for retaining the plates on the drum would not be parallel with said lines of printing and consequently when engaged in the type grooves of the drum would extend at an angle inclined in either direction with the result that the printed matter would not be properly located on the printed sheet.

The present invention has reference to a modified form of printing plate to produce from the sheet novel retaining means to engage the type grooves of the drum so that the plate will be properly positioned and may be mounted on the drum at any suitable point and remain in the position in which it is placed.

A further object of the invention is to form the retaining means back from the ends of the plate and to make provision for accommodating the plates which are of arcuate formation corresponding to the curvature of the drum at its periphery concentric to the center thereof at all points and to provide means for properly locating the retaining means through the medium of a gauge provided for this purpose.

Other objects and advantages will appear and be brought out more fully in the following specification, reference being had to the accompanying drawings wherein:

Fig. 1 is a central vertical sectional view of a forming machine for producing the plates in accordance with the invention;

Fig. 2 is a horizontal sectional elevation taken on the line 2—2 of Fig. 1;

Fig. 3 is a fragmentary vertical sectional elevation taken on the line 3—3 of Fig. 2;

Fig. 4 is a fragmentary view similar to Fig. 1 but showing the completed step in the forming operation;

Fig. 5 is a face view on a reduced scale of a forming die used;

Fig. 6 is a sectional view of one of the plates;

Fig. 7 is a face view of one of the plates;

Fig. 8 is a view similar to Fig. 1 of a modified form;

Fig. 9 is a face view of a die employed in the form shown in Fig. 8;

Fig. 10 is a face view of a plate produced between dies shown in Fig. 8;

Fig. 11 is a detail view of a retaining means employed with the form of plate shown in Fig. 10;

Fig. 12 is a fragmentary end elevation showing the plate and retaining means in position on a drum;

Fig. 13 is a view similar to Fig. 4 of a still further modified forming device;

Fig. 14 is a fragmentary face view of a forming die used with the form of Fig. 13; and

Fig. 15 is a sectional view of a plate produced by the device of Figs. 13 and 14.

Referring to the drawings and more particularly to the form shown in Figs. 1 to 7 inclusive, 20 designates the top of the frame of the machine having a bed plate 21 on which is mounted a base plate or block 22 upon which the working operations are performed. The frame is provided with the usual standard, not shown, having an arm as illustrated in my prior application in which a plunger 23 is designed to be reciprocated. The plunger carries a block 24 secured in position by stud bolts 25 and said block supports a cross-head 26 having horizontal lugs 27 vertically apertured to receive pins 28. The cross-head 26 is recessed at the front and back to receive plates 29 and 30 held by stud bolts 31. The plate 30 is in the form of a die having its lower edge provided with a series of beveled teeth or blades 32 and intervening recesses or notches 33. These blades operate at the front and back of a block 34 mounted upon the base plate 22 by having a concaved arcuate bottom face 35 concentric to the axis of a segment 36 mounted on the sides of the frame as indicated at 37 and constituting a half section or other segment of the printing machine drum provided with the usual grooves 38 employed in the machine for receiving the type or plate retaining means. An anvil, pressure or guide plate 39 presses against the front of the forming die 30 and has apertured lugs or ears 40 receiving the lower ends of the pins 28 adapted to compress springs 41 mounted on the pins between them and the lugs 27. The anvil 39 cooperates with an anvil 42 mounted in a recess 43 at the front of the block 22 and held by stud bolts 44. This anvil has its operative face or top edge 45 formed to fit the contour of the plate 46 when

mounted upon the segment 36 and concentric to the axis thereof throughout its length. The anvil 42 produces a bottom forming die in that it is recessed at its upper inner corner as indicated at 47 and provided with a projecting rib 48 against which the plate is punched out and bent down to form angular groove engaging tongues 49 spaced from the ends of the plate 46. In order to accommodate the plate at any desired degree of projection beyond the forming dies the arcuate portion of the block 34 is slotted as at 50 to receive the end of the plate therein and a stop member 51 is provided in the slot or recess 50 and is mounted upon a guide pin 52 which is movable through arcuate slots 53 in the side walls of the arcuate portion and adapted to be clamped in adjusted position by suitable nuts 54 mounted on the ends thereof and frictioning against the ends of the block 34. By this means, the forming dies may be caused to act upon the plate 46 at any desired distance from the extremities thereof and as before stated, the die 30 not only stamps out the engaging tongues 49 from the plate but also bends the same downwardly at an obtuse angle to the plate as clearly shown in Fig. 1 of the drawings. Also, cooperating with the die 30 is an arcuate die 55 received in corresponding guide ways in the convex upper portion at the front of the block 22 in back of the anvil 42 and held rearwardly displaced by springs 56 mounted in recesses 57 below the guide way for the die 55, said springs acting against the front walls of the recesses 57 and lugs 58 depending from the die 55. The top front edge of the die 55 is provided with recesses 59 designed to engage portions of the tongues 49 to cause the same to be bent horizontally inwardly as indicated at 60 while the remaining portions extend or are bent radially but substantially at right angles to the inwardly directed portions 60 at the inner ends of the slots produced in the plates as a result of stamping out the tongues on three sides in the manner shown and described. These tongues are designed to engage in the type receiving grooves of the drum of the printing machine and by reason of the particular formation described will grip the same with sufficient friction to firmly keep the plate in position and prevent accidental displacement thereof. Of course, it is to be understood that when one end of the plate is provided with a series of tongues positioned in spaced relation as shown in Fig. 7, the plate is inverted to produce the tongues near the other end thereof in which case the tongues already formed for engaging the drum grooves are fitted in the corresponding groove of the segment 36, which in this manner constitutes a gauge calibrated physically by reason of the grooves formed therein to accurately position the opposite end so that the tongues produced at the latter end will be equidistantly spaced apart from the previously formed tongues as to exactly correspond with the spacing of certain grooves of the drum and thereby permit the plate to be mounted against the periphery of the drum when slid into position edgewise or axially with respect to the drum and grooves thereof.

In order to reciprocate the arcuate die 55, any suitable means may be provided. As shown, a shaft 61 is pivoted in the sides of a bearing frame 62 at the back of the block 34 and has a plurality, preferably a pair of eccentrics or arms 63 fixed thereto and pivotally connected by suitably articulated joints 64 to pivot ears at the back edge of the die 55. A handle 65 is mounted on one end of the shaft and by actuating this handle, the die 55 may be moved forward or backward in its arcuate guide to act upon the plate or permit clearance for the vertically reciprocating die 30 when operated in the manner previously described.

In the form of the invention shown in Figs. 8 to 12 inclusive, the construction is the same as that just described except that in lieu of the die 30, a die 66 is provided. This die has its lower end reduced in thickness as indicated at 67 and these dies which are both cutting and punching dies of course co-act with the interfitting portions of the anvil to stamp out the metal of the plate in the manner described. In this instance the metal of the plate is stamped out to produce elongated slots 68 of suitable length and number and spaced from each end of the plate by reversing the position of the plate in the manner previously described in connection with Fig. 1. In this form as well as the form previously described, a rack bar 69 may be formed adjacent one or both of the slots 53 for engagement by a pinion 70 on the shaft 52 so that by rotating the nut 54, the stop member 51 may be moved to any desired position for adjustment according to the extension of the end of the plate beyond the vertically reciprocating die to be determined by the distance it is desired or necessary to locate the tongues 49 or slots 68 from the ends of the plate. In the latter form, the arcuate die 71 cooperates with the die 66 in the punching operation while an anvil 72 is recessed as at 73 to receive the lower edge of the die 66 corresponding to the width of the slots 68. The actuating means for the movable die 71 is the same as that already described and will be designated by corresponding reference characters. In order to retain the plate formed with the slots 68 in position upon a printing drum, keys or split pins 74 may be employed as shown in Fig. 1. The heads 75 of these keys are inserted in the grooves of the printing drum as disclosed in Fig. 12 with the shanks extending through the slots 68 and then bent over or clinched as indicated at 76, thus retaining the printing plate in any desired aforesaid position of the printing drum.

In Figs. 13, 14 and 15 of the drawings, the same general structure of the machine or apparatus is employed with the exception of the die members and lower anvil. In this form the lower anvil 77 is provided with an undercut recess 78 producing an overhanging rib 79 and the upper die 80 has recesses 81 at the back with the result that the stamped out slots and tongues resulting therefrom are of angular formation as are the tongues 49. In this respect it is also pointed out that the retaining members or keys 74 are also bent angularly when in retaining position. This results in the form of plate illustrated in Fig. 15, the tongues being first directed radially as indicated at 82 and the recess 83 of the lower die 84 having closed portions or ribs 85 which extend into the undercut recess 78 below the rib 79 when the tongues are punched out as shown in Fig. 13, after which actuation of the handle 65 to move the die 84 rearwardly in an arcuate path, will cause portions of the tongues 82 to be directed outwardly as at 86 beneath the slots formed by the tongues and toward the ends of the plate. In this form the relative positions of the springs 57 and lugs 58 is reversed, due to the fact that the operative movement of the die is rearwardly instead of forwardly as in the other described forms, more particularly shown in Figs. 1, 4 and

8 of the drawings. Tongues bent in the manner just described will enter the slots of the retaining grooves for the type or printing plate and engage the opposite spaced head of the T-shaped member producing the T-shaped slots or retaining grooves of the printing drum as it is thought will be readily appreciated by anyone acquainted with this art. In either form positive and accurate retention of the plate carrying the cut or advertising matter thereon will be equally insured.

While I have illustrated and described the preferred form of construction for carrying my invention into effect; this is capable of variation and modification without departing from the spirit of the invention. I, therefore, do not wish to be limited to the precise details of construction set forth, but desire to avail myself of such variations and modifications as come within the scope of the appended claims.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. As a new article of manufacture, a printing plate having stamped out portions forming openings therein and retaining members of angular form formed by said stamped out portions severed on one side of each opening and disposed angularly on at least one side of the openings.

2. A printing plate of the class described bearing matter to be reproduced and having slots stamped in spaced relation to the ends thereof, and angular retaining means at the inner edges of the slots extending parallel to the plane of the plate adapted to engage the type grooves of a printing drum.

3. As a new article of manufacture, a printing plate having right angular tongues in spaced relation to the ends thereof to engage spaced type receiving grooves in the periphery of a printing drum and having oppositely extending portions parallel to the plate.

4. A printing plate of the class described having tongues stamped from the metal thereof in spaced relation to its ends and bent down substantially normal to the plate, said tongues being formed with severed portions extending substantially at right angles thereto in the plane of the plate but spaced therefrom.

5. A printing plate having a cut with matter to be reproduced thereon having its ends severed squarely with said printing matter and short spaced portions bent substantially at right angles in the same direction, and having the same formed with right angular rebent portions to frictionally engage beneath the type receiving grooves of a printing drum.

6. As a new article of manufacture, a printing plate having a rubber or other cut thereon, the ends of the plate being severed in parallel relation to the matter on the cut and portions spaced from the ends bent at right angles radially to form inwardly directed portions, alternate portions thereof being formed with further severed portions extending substantially normal thereto.

7. A printing plate of the class described having lines of type or advertising matter thereon and the ends of the plates sheared parallel therewith and spaced portions spaced from the ends of the plate formed with radially inwardly bent portions and portions extending angularly substantially normal with respect thereto to secure the plate in the type grooves of a printing cylinder.

8. An article of manufacture comprising a printing plate of comparatively rigid sheet metal having tongues stamped therefrom spaced from the ends of the plate and having the free ends of the tongues bent at right angles in opposite directions.

9. As a new article of manufacture, a curved printing plate having lines of type thereon and having spaced imperforate tongues stamped therefrom substantially at right angles to the plane of the plate at the concaved side and half portions of the tongues toward one side bent therefrom substantially parallel to the plate and at right angles to the tongues proper in opposite directions and bent outwardly toward the adjacent ends of the plate.

MILTON C. TAYLOR.