Oct. 9, 1934. G. S. UPSHAW 1,976,640

METHOD OF PREPARING ORIGINAL ENGRAVED PLATES FOR PRINTING ON ROTARY PRESSES

Filed Oct. 27, 1930 2 Sheets-Sheet 1

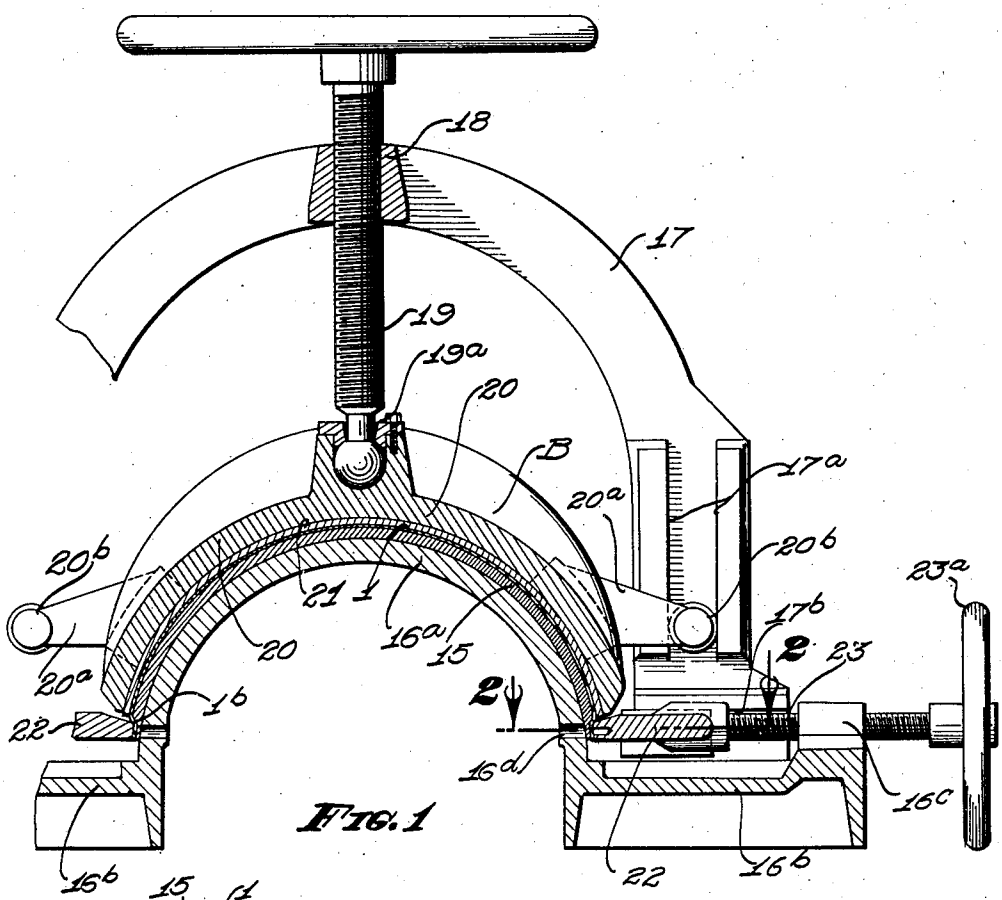


FIG. 1

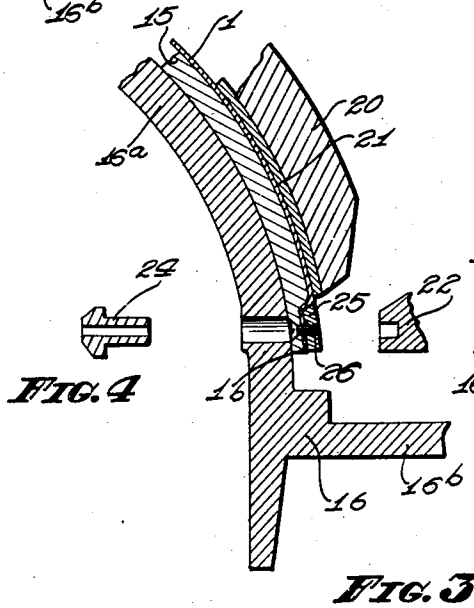


FIG. 4

FIG. 3

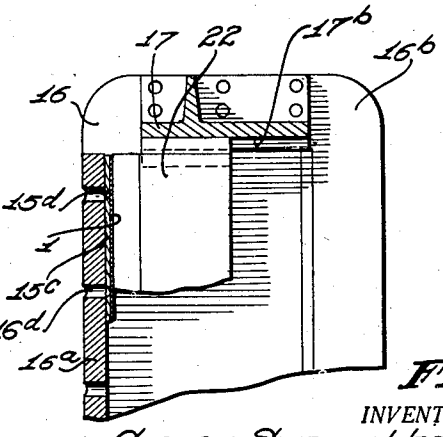


FIG. 2

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METHOD OF PREPARING ORIGINAL ENGRAVED PLATES FOR PRINTING ON ROTARY PRESSES

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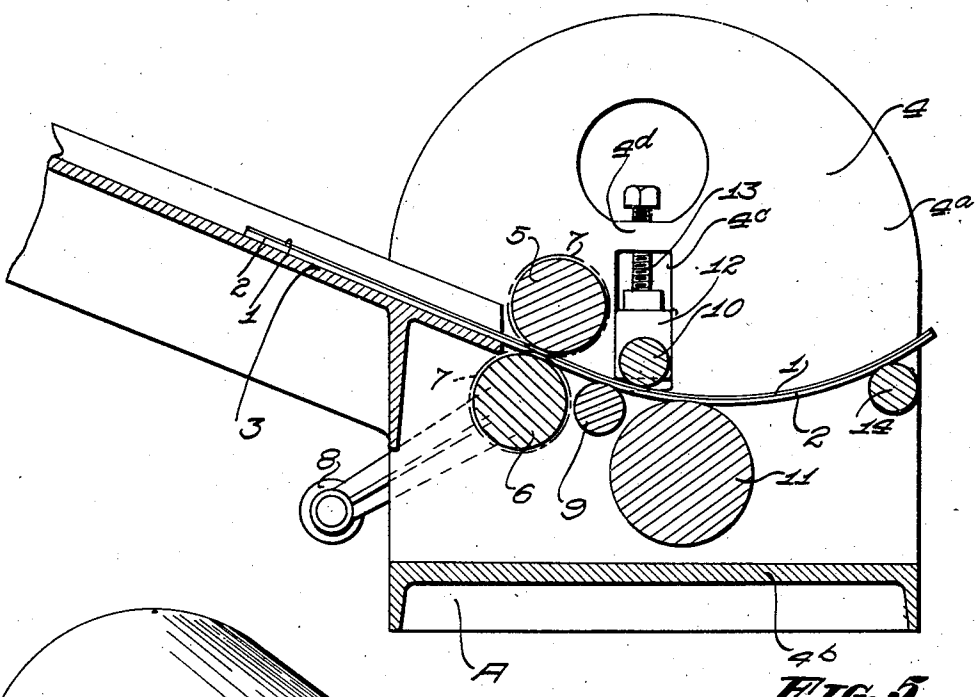


FIG. 5

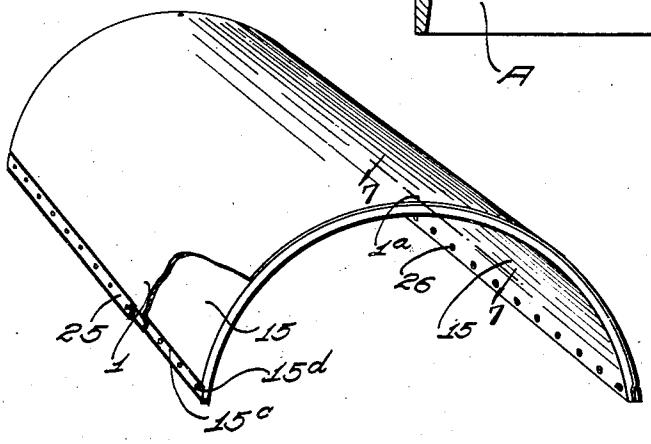


FIG. 6

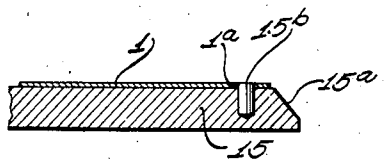


FIG. 7

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1,976,640

METHOD OF PREPARING ORIGINAL ENGRAVED PLATES FOR PRINTING ON ROTARY PRESSES

George Shirley Upshaw, San Diego, Calif.

Application October 27, 1930, Serial No. 491,422

7 Claims. (Cl. 101—375)

My invention relates to a method of preparing original engraved plates for printing on rotary presses, and the objects of my invention are:

First, to provide a method of this nature which is particularly adapted for preparing original engraved plates used in printing art, pictorial, or magazine sections of a newspaper;

Second, to provide a method of this nature which eliminates the use of mats and stereotype casts for pictorial printing by preparing the engraved plates themselves for use on the rotary press;

Third, to provide a method of this nature which eliminates the loss of detail occasioned by the use of mats and stereotype casts due to the transferring and re-transferring of the images;

Fourth, to provide a method of this nature which enables the use of a much finer screen in the process of producing the engraved plate than is possible when these plates are to be used in the conventional manner upon rotary presses;

Fifth, to provide a method of this nature which makes possible on rotary presses the fine art effects now obtainable only upon flat bed presses, thereby greatly reducing the time and labor required to print the pictorial sections of a newspaper;

Sixth, to provide a method of this nature which is adapted for use in conjunction with all rotary press work as well as newspaper work;

Seventh, to provide a method of this class which makes possible the printing of pictorial sections in several colors; and

Eighth, to provide on the whole a method of preparing original engraved plates, which is particularly simple and economical of execution, and which on the whole greatly simplifies pictorial printing.

With these and other objects in view as will appear hereinafter, my invention consists of certain novel features of construction, combination and arrangement of parts and portions as will be hereinafter described in detail and particularly set forth in the appended claims, reference being had to the accompanying drawings and to the characters of reference thereon, which form a part of this application, in which:

Figure 1 is a fragmentary transverse sectional view of the clamp press, one of the devices used in preparing the original engraved plates by my method; Fig. 2 is a fragmentary sectional view thereof, through 2—2 of Fig. 1; Fig. 3 is an enlarged detailed fragmentary sectional view, showing in detail the manner of securing the engraved plate to its base; Fig. 4 is a sectional view through an adapter member used in conjunction with the printing with the clamp press; Fig. 5 is a fragmentary transverse sectional view of the bending machine used in preparing engraved plates; Fig. 6 is a perspective view of the engraved plate as it appears when ready for installation upon the rotary press; and Fig. 7 is an enlarged fragmentary sectional view through 7—7 of Fig. 6.

Similar characters of reference refer to similar parts and portions throughout the several views of the drawings.

Engraved plate 1, blanket 2, base 15, pad 21, locking bars 25, and screws 26 constitute the principal parts and portions of my printing device; bending machine A, including: table 3, framework 4, feed rollers 5 and 6, gears 7, handle means 8, fixed minor roller 9, movable minor roller 10, major roller 11, travelers 12, screw members 13, and guide roller 14; clamp press B, including: bed 16, U-frames 17, cross frame 18, screw member 19, movable jaw 20, crimping bars 22, screw members 23, and adapter 25, constitute the principal parts and portions of my means for preparing engraved plates for rotary presses.

Heretofore, in order to adapt pictorial matter to the rotary press, it has been necessary to take an impression from a flat engraved plate by means of a mat which is at first of a plastic nature. In order to use the mat, it has been necessary to employ a coarse screen in producing the engraved plate. In transferring the image to the mat, a relatively large per cent of the detail is lost. After the impression is made, the mat is bent and treated for a considerable time to harden it. Then, from the mat a stereotyped cast is made, again causing a loss of considerable detail.

With my process, the mat and stereotyped cast are entirely eliminated, the engraving plate itself being used on the rotary press.

The engraved plate, designated 1, is produced in the manner used in producing engraving plates for flat bed presses, and is made approximately the size of the stereotype casts formerly used. At each end of the plate there is provided a blank strip or marginal portion 1*b* extending beyond the printing line. At either side of the plates, preferably centered between the ends, is a small perforation 1*a*.

The first machine used upon the engraved plate is a bender. The engraved plate is placed face down upon a blanket 2, preferably of rubber, so as to protect the engraved surface. The engraved plate and blanket are placed on the table 3 of the bending machine, designated A.

The bending machine includes a framework 4,

having upright end members 4a, and a base member 4b. The table 3 slopes downwardly towards the frame and extends between the upright end members. Adjacent the lower end of the table, a pair of feed rollers 5 and 6 are provided, which extend between the ends 4a of the frame. The feed rollers 5 and 6 are connected together on the outside of the end members 4a by gears 7. A crank means 8 is provided for rotation of the feed rollers. The rollers are spaced apart a distance slightly less than the normal combined thickness of the blanket and engraved plates, and are located in such a manner with respect to the table 3, that with the engraved plate and blanket lying flat on the table, they may be guided accurately between the feed rollers.

Beyond the feed rollers is a fixed minor bending roller 9 and a shiftable minor bending roller 10. The minor rollers 9 and 10 are arranged above and below, respectively, of the line of travel of the engraved plate 1 and its blanket 2. Beyond the minor rollers 9 and 10 is a major roller 11, of considerably greater diameter. The point of engagement of the upper minor roller 10 is between the points of engagement of the minor roller 9 and major rollers 11.

The minor roller 10 is supported at its end by traveler members 12, which operate in a slot 4c provided in the end members 4a of the bending machine. Each traveler member 12 is provided with a screw member 13, which extends through a web 4b above the slot 4c. The shiftable minor roller 10 is adjusted until the three bending rollers give the engraved plate issuing therefrom exactly the desired curvature.

It will be noted that the points of contact of the bending rollers are particularly close together; in addition, the use of a major roller, which is considerably larger than the minor rollers 9 and 10, causes the engraved plate to strike the major roller at a particularly acute angle with the underlying surface, so that the plate is gradually deflected to the desired curvature. Furthermore, the blanket, being slightly yieldable, prevents the bending rollers from creating localized bending stresses that would cause uneven bending of the engraved plate.

Beyond the bending rollers 9, 10, and 11, there is provided a guide roller 14, which supports the bent engraved plate as it issues from the bending rollers. After bending the engraved plate to the desired curvature, it is placed upon a base member 15. The base member 15 is slightly less than semi-cylindrical, and has substantially the size of a stereotype cast. The arcuate ends 15a of the base member 15 are beveled, as shown in Fig. 7, similar to the ends of stereotype casts, so as to enable the mounting of the base member on the cylinder of a conventional rotary press. The outer periphery of the base member 15 conforms to the curvature of the inner periphery of the engraved plate when said plate is bent to the proper curvature.

Centered between the straight ends of the base member and adjacent the curved ends thereof, is a pair of pins 15b, which register with perforations 1a provided in the engraved plate. The perforations 1a are preferably not formed until after the engraved plate is bent, a center punch mark only being made before bending the plate.

After placing the engraved plate upon its base, these two members are positioned in the clamp press, designated B. The clamp press B comprises a bed 16 having a semicylindrical central portion or fixed clamp jaw 16a, with horizontally extending marginal portions 16b along its sides. At each end of the bed there is provided an upwardly extending U-frame 17, the legs of which are secured to the ends of the marginal portions 16b.

A cross member 18 connects the two U-frames at their upper portions. Vertically disposed and centered in the cross member 18, is a screw member 19, the lower end of which is attached by a ball and socket joint 19a to a movable clamp jaw 20.

The movable clamp jaw 20 is slightly less than semicylindrical. The under surface of the movable clamp jaw 20 is so curved that there is a space of constant distance between it and the fixed clamp jaw when the two members are spaced apart a distance equal to the thickness of the base member 15 plus the thickness of the engraved plate 2, and plus the thickness of a protecting pad 21 placed thereon.

The end portions of the movable clamp jaw 20 are provided with outwardly extending arms 20a at the end of which are rollers 20b. Each leg of each U-frame 17 is provided with a pair of guide bosses 17a, between which fit the corresponding rollers 20b.

The base of each leg of each U-frame 17 is provided with a horizontally disposed guide channel 17b. Extending between the opposed legs of the two U-frames 17, is a crimping bar 22, the ends of which are guided by the channels 17b. Attached to each crimping bar 22, is a screw member 23, which extends through an internally threaded sleeve 16c attached to the marginal portion 16b of the bed 16. The outer end of each screw member 23 is provided with a hand wheel 23.

Along the straight end of the base member 15, said base member is reduced in thickness, forming marginal depressed portions 15c. These depressed portions are opposite the ends of the crimping bar 22. The marginal portions of the engraved plates beyond the printing line overhang the depressed portions 15c.

After placing the engraved plate 1 upon its base 15 and then placing the pad 21 upon the outer or engraved surface of the engraved plates, these three members are positioned on the fixed jaw 16a, as shown in Fig. 1. The movable jaw is then shifted downwardly until it is pressing with considerable force against the pad 21, holding the engraved plate 1 firmly upon the base member 15. When thus held, the crimping bars 22 are moved inwardly so as to crimp the marginal portions 1b of the engraved plate into the depressed marginal portions 15c.

Provided in the fixed jaw 16a, opposite the ends of the crimping bar, are a plurality of holes 16d. Opposite these holes the marginal portions 15c of the base member are provided with countersunk openings 15d, the countersunk ends thereof being on the inner periphery of the base member. While the engraved plate and its base member are held by the clamp jaw 20 and crimping bars 22, holes are bored through the marginal portions 1b of the engraved plates.

As the base member may be used many times, an adapter 24 is provided which fits in the holes 16c, which holds a drill in alinement with the openings 15d provided in the base member, so as to prevent enlarging thereof.

After boring holes in the marginal portions 1b of the engraved plate, the crimping bars are backed away therefrom, and a securing bar 25 is placed along said marginal portions. The secur-

ing bar 25 is provided with a plurality of threaded holes therein, which aline with the holes 15*d* and those bored in the engraving plate.

Screws 26 are then inserted through the openings 16*d* and screwed into the locking bar 25. The base member and engraved plates are then removed from the clamping press and placed on the cylinder of the printing press in the same manner as stereotyped casts.

The heads of the screws bear against the cylinder of the printing press and cannot work out and cause damage. The locking bars 25 are common to a plurality of the screws, since these members cannot work loose.

My method of preparing engraved plates for use on cylindrical presses consists in trimming the plate to the desired size, and providing marginal portions along each end beyond the printing line, then placing a blanket over the engraved surface, then inserting the blanket and engraved plate into a bending machine adapted to give the desired curvature to the engraved plates; then placing the engraved plate upon a base so as to bring the surface to the desired height; then placing the engraved plate and base in a clamp press and covering the engraved surface with a pad, and clamping the engraved plate and base; then pressing the free marginal portions of the engraved plate to corresponding pressed portions of the base; then securing the base and engraved plate at this marginal portion by inserting screws from the inside outwardly through said base into a locking bar common to each straight side of the engraving plate; and then positioning the engraved plate and its base upon the cylindrical press.

Though I have shown and described a particular means and method of preparing original engraved plates for rotary presses, I do not wish to be limited to this particular means and method, but desire to include in the scope of my invention the means and method substantially as set forth in the appended claims.

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

1. A method of preparing original engraved plates for rotary printing presses, consisting in rolling a plate from edge to edge to form an arc, then placing said plate upon a correspondingly curved base, then clamping the same thereon and then interlocking said base and plate together by their straight sides.

2. A method of preparing original engraved plates for rotary presses, consisting in covering the printing side of a plate with a yieldable blanket, then rolling said plate from edge to edge while so covered to form an arc, and then securing said plate upon a correspondingly curved rigid base member while maintaining said plate substantially free of tensional stresses.

3. A method of preparing original engraved plates for rotary presses, consisting in covering the printing side of a plate with a yieldable blanket, then bending said plate in an arc while so covered, then placing said plate upon a correspondingly curved rigid base member, then depressing the straight marginal portions of said plate below the printing surface thereof, then placing locking bars in said depressed portions, and then inserting means interlockable with said locking bar from the inside outwardly through said base.

4. A method of producing original engraved plates for rotary presses consisting in covering the printing side of a plate with a yieldable blanket, then rolling said plate from edge to edge while so covered to form an arc, then placing said plate upon a correspondingly curved base, then clamping the same thereon, then depressing the straight marginal portions of said plate below the printing surface thereof, then locking said plate and bases together at the depressed portions at their edges.

5. A method of producing original engraved plates for rotary presses consisting in covering the printing side of a plate with a yieldable blanket, then rolling said plate from edge to edge while so covered to form an arc, then placing said plate upon a correspondingly curved base, then clamping the same thereon, then depressing the straight marginal portions of said plate below the printing surface thereof, then placing locking bars in said depressed portions, and then inserting means interlockable with said locking bars from the inside outwardly through said base.

6. A method of preparing original engraved plates for rotary printing presses consisting in, rolling a plate from edge to edge to form an arc, then placing said plate upon a correspondingly curved base, then clamping the same thereon in a manner to substantially avoid tensional stresses, and then interlocking said plate and base together by their straight sides.

7. A method of producing original engraved plates for rotary presses consisting in, covering the printing side of a plate with a yieldable blanket, then rolling the plate from edge to edge while so covered to form an arc, then placing said plate upon a correspondingly curved base, then clamping the same thereon in a manner to substantially avoid tensional stresses, then depressing the straight marginal portions of said plate below the printing surface thereof, then locking said plate and bases together at the depressed portions at their edges.

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