United States Patent [19]

Martin

[11] **3,724,370**

[45] **Apr. 3, 1973**

[54] **IMPRINTING CYLINDER WITH REMOVABLE IMPRINTING BLOCK**

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[22] Filed: **Dec. 28, 1971**

[21] Appl. No.: **213,067**

[52] **U.S. Cl.** **101/377,** 101/374

[51] **Int. Cl.** **B41f 27/06**

[58] **Field of Search** 101/372, 373, 374, 377, 380, 101/381, 390, 391, 392–394, 396, 375

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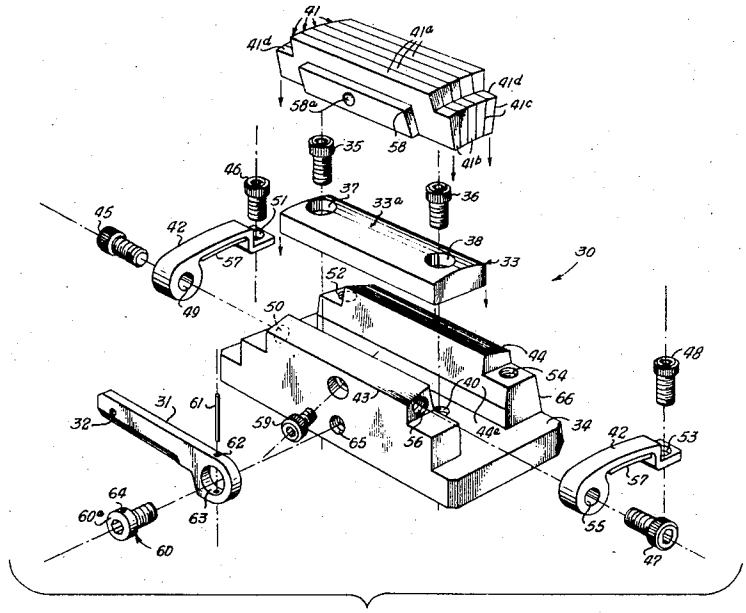
Primary Examiner—J. Reed Fisher

Attorney—Arthur M. Sloan

[57] **ABSTRACT**

An imprinting cylinder having a cut out portion and an imprinting block adapted to be removably insertable in the cut out portion of the imprinting cylinder. A locking lever pivotable on a screw is provided to pressure lock the imprinting block in the imprinting cylinder. Removable clips are fixed to the imprinting block to retain tapered hot metal cast type slugs. The taper of the hot metal cast type slugs is predetermined to effect a curvature of the imprinting surface paralleling that of the imprinting cylinder.

13 Claims, 10 Drawing Figures



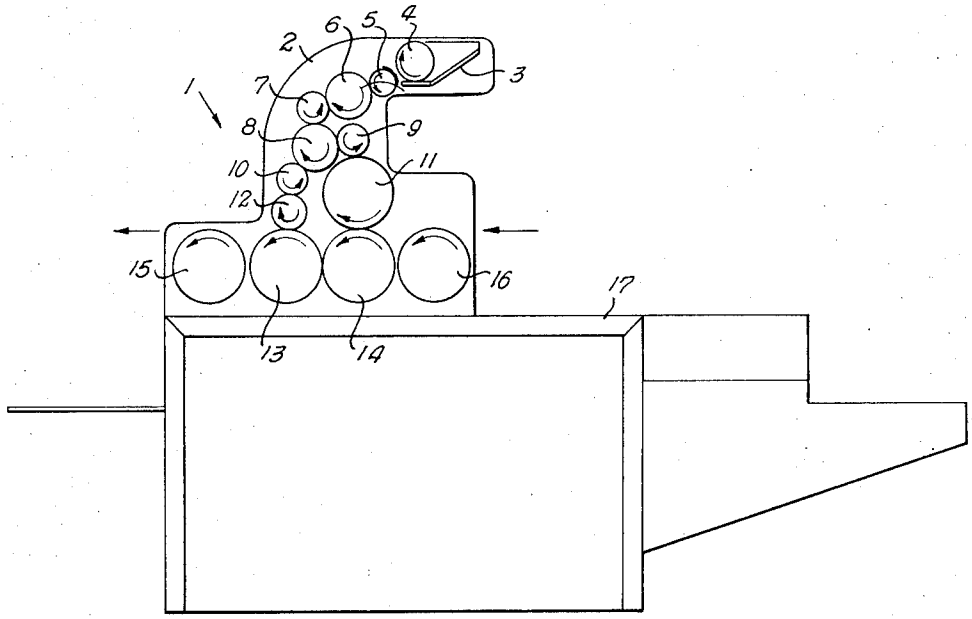


Fig. 1

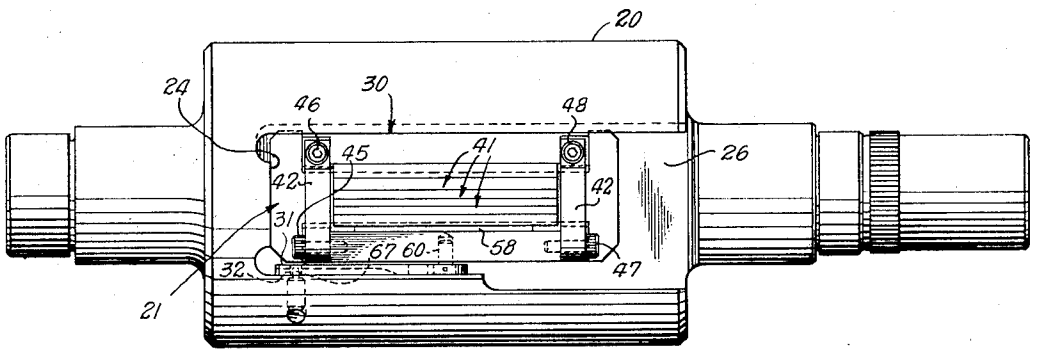


Fig. 2

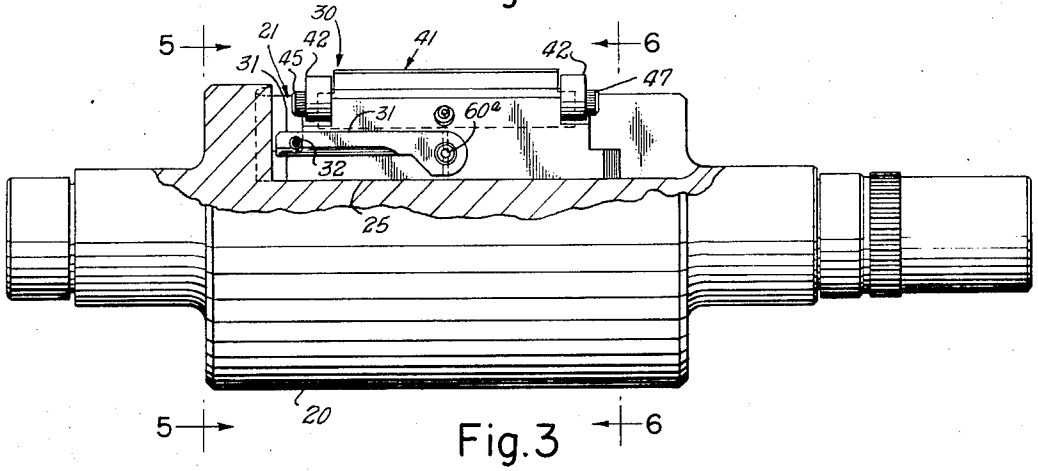


Fig. 3

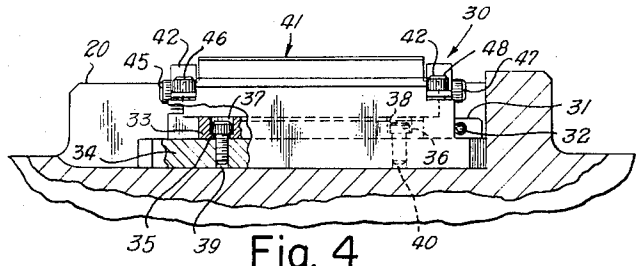


Fig. 4

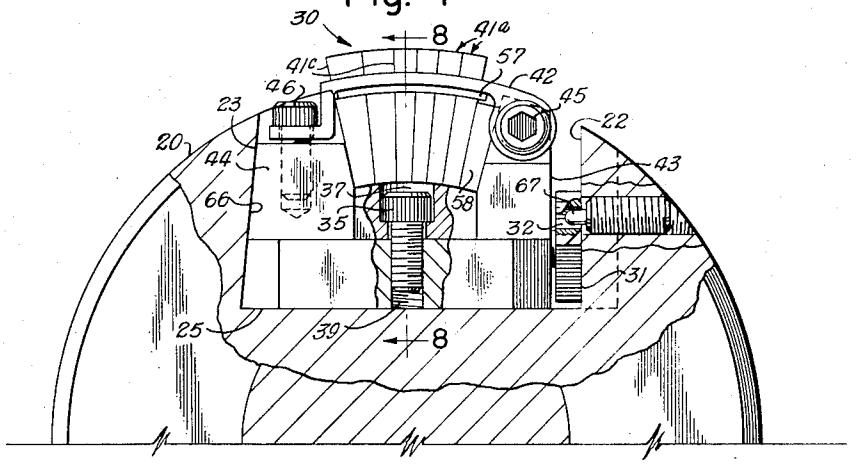


Fig.5

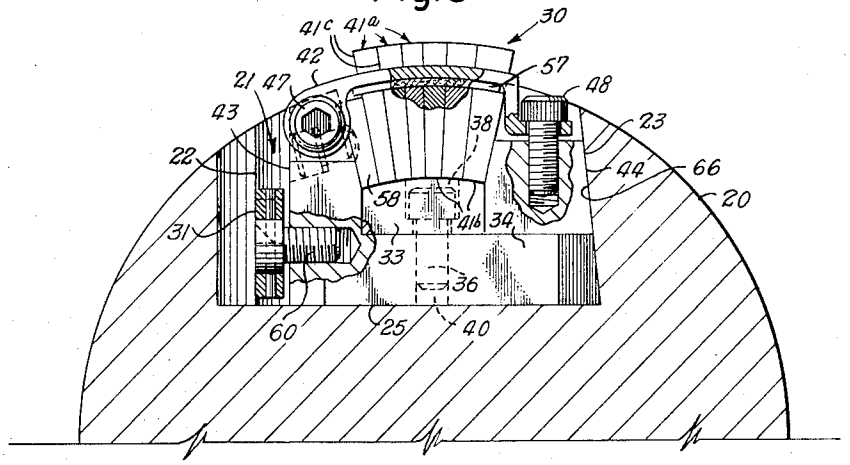


Fig.6

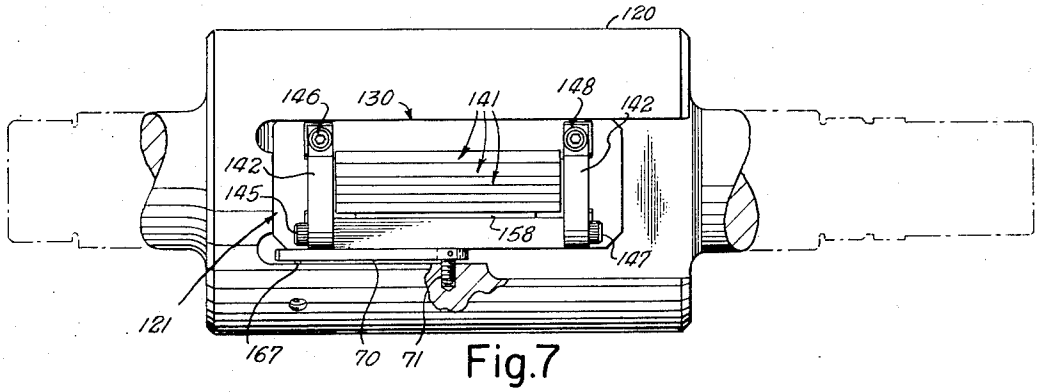


Fig.7

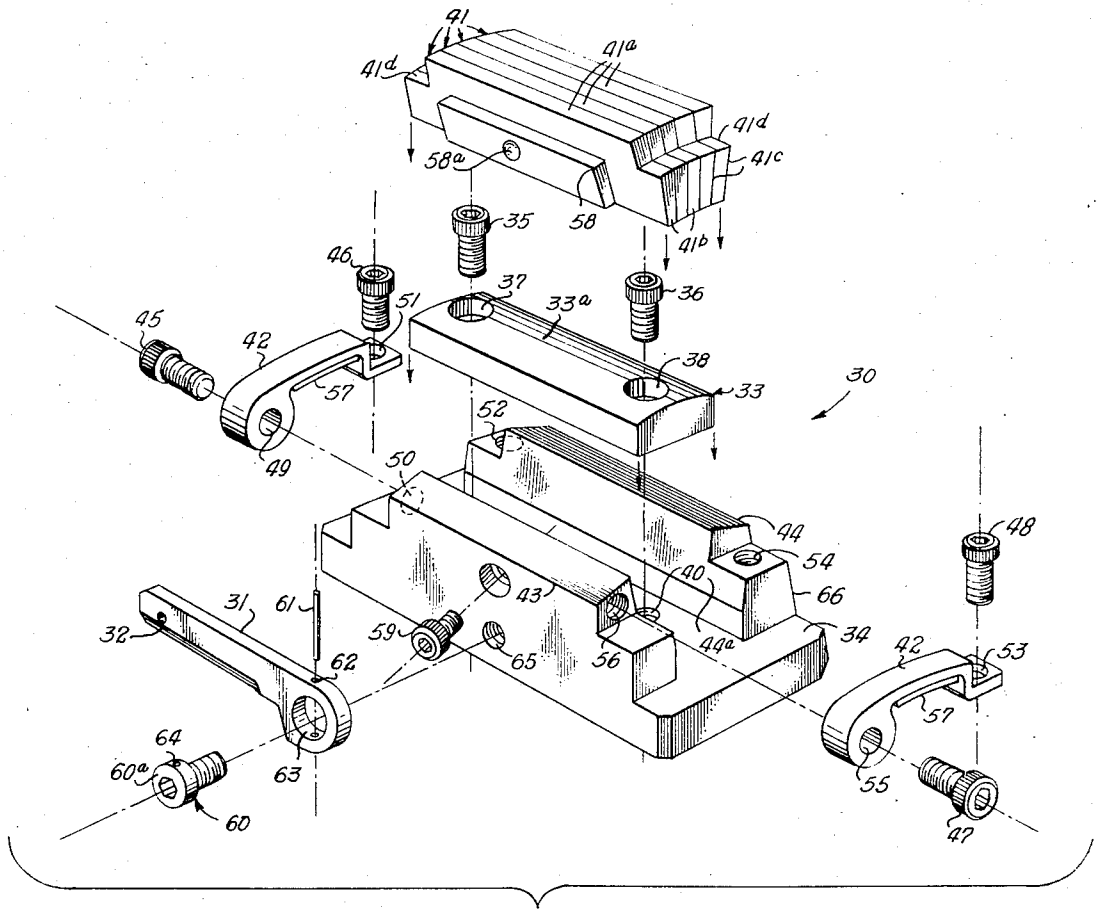


Fig. 9

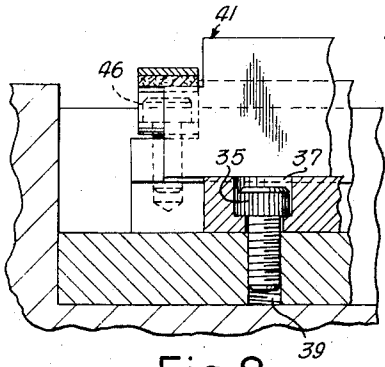


Fig. 8

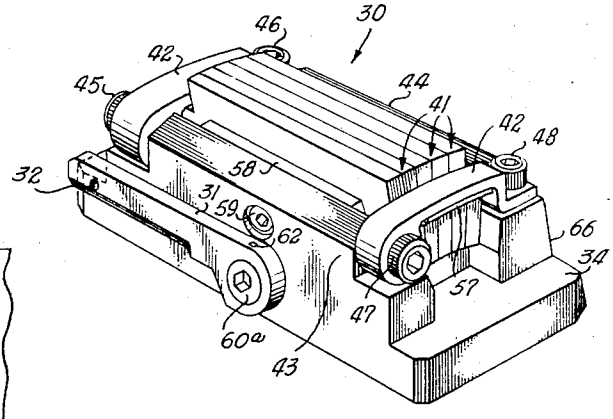


Fig. 10

IMPRINTING CYLINDER WITH REMOVABLE IMPRINTING BLOCK

This invention relates to an improved imprinting cylinder with a removable imprinting block or chase. The imprinting block or chase is inserted in a cut out portion of the imprinting cylinder and is pressure locked in the imprinting cylinder by a locking arm or lever which pivots on a screw. Removable clips are fixed to the imprinting block or chase to retain tapered hot metal cast type slugs. The taper of the hot metal cast type slugs is predetermined to effect a curvature of the imprinting surface of the massed hot metal cast type slugs paralleling that of the imprinting cylinder.

Imprinting cylinders according to the subject invention may be used in conventional rotary letter presses or rotary printing presses, collators or other suitable equipment for crash imprinting runs of preprinted, folded, continuous forms such as register forms and/or individual sheet forms.

The imprinting cylinder imprints the top copy with ink and "crash" imprints, i.e. imprints by means of pressure the duplicate, triplicate, quadruplicate, etc. copies through the vehicle of carbon paper or without carbon paper by utilizing copy paper such as the carbonless variety presently manufactured by National Cash Register Company of Dayton, Ohio.

Preprinted forms, i.e., forms preprinted with constant information frequently need to be printed with variable information such as numbering and single or multi line headings. Numbering devices that are satisfactory for sequential numbering are readily 1 available; however no satisfactory method of crash imprinting headings has been heretofore available for a rotary press with hot metal cast type slugs to imprint and number short runs of preprinted, folded, continuous register forms and/or individual sheet forms.

In addition prior art rotary printing devices have used conventional relatively expensive rubber plates for printing; whereas the subject invention uses relatively inexpensive hot metal cast type slugs for rotary printing. Any suitable hot metal cast type slugs may be used in the subject invention. By way of example and not of limitation, some of the hot metal cast type slugs which may be suitably adapted for the subject invention include type slugs produced by equipment sold under the trademarks Linotype, Intertype, and Monotype, and equipment sold by the Ludlow Typograph Co. of 2032 Claybourn; Chicago, Illinois; under the trademark Ludtype.

To effect quick changes of information to be imprinted it is only necessary to remove the imprinting block or chase from the imprinting cylinder, followed by removal of the clips from the ends of the imprinting block or chase and removal of the hot metal cast type slugs from the imprinting block or chase. New slugs with the desired information are inserted in the imprinting block. The clips are fixed to the ends of the imprinting block, and the imprinting block is inserted in the imprinting cylinder and pressure locked by pivoting the locking arm into the locked position. Further the operator of the equipment may have spare imprinting blocks or chases with type for the second and/or subsequent runs set up in advance so that quick changes in imprinting blocks may be made to effect runs with different printed information. The speed with which changes of information to be printed can be effected results in great savings of time and money.

Each imprinting cylinder in accordance with the invention can be designed with one or more cut out portions or slots for the receipt of imprinting blocks or chases in accordance with the invention. The number of imprinting blocks to be carried by each imprinting cylinder is largely dependent upon the circumference of the imprinting cylinder.

Accordingly the primary object of the subject invention is to provide a low cost and efficient means for crash imprinting single or multi line information on continuous or individual forms.

Another object is to provide an imprinting cylinder with readily changeable type.

A further object of the subject invention is to provide an imprinting cylinder with an interchangeable imprinting block or chase.

Still another object of the subject invention is to provide an imprinting cylinder adapted for receipt of one or more interchangeable imprinting blocks or chases with interchangeable type.

Yet another object of the subject invention is to provide an imprinting block or chase that is specially adapted to be inserted and locked in an imprinting cylinder.

A further object of the subject invention is to provide an imprinting block or chase adapted to hold tapered hot metal cast type slugs.

Still an object of the subject invention is to provide an imprinting cylinder for rotary printing with hot metal cast type slugs.

An additional object of the subject invention is to provide an imprinting block or chase adapted to hold tapered hot metal cast type slugs with removable means for retaining the hot metal cast type slugs in the imprinting block or chase in the desired position.

Additional objects and advantages of the invention will appear from the following description and accompanying drawings.

The manner in which the above and other objects of the invention are to be accomplished will be readily understood on reference to the following specification when read in conjunction with the accompanying drawings, wherein:

FIG. 1 is a schematic diagram of a typical rotary printing press.

FIG. 2 is a top view of the imprinting cylinder of the invention showing an imprinting block or chase in locked position.

FIG. 3 is a partially cut away side view of the imprinting cylinder of the invention showing an imprinting block or chase in locked position.

FIG. 4 is another partially cut away side view of the imprinting cylinder of the invention showing the opposite side to FIG. 3 with a partially cut away imprinting block in locked position.

FIG. 5 is a partially cut away end view of the imprinting cylinder with inserted imprinting block taken along the lines 5—5 of FIG. 3.

FIG. 6 is another partially cut away end view of the imprinting cylinder with inserted imprinting block taken along the lines 6—6 of FIG. 3.

FIG. 7 is a top view of another embodiment of the invention showing the locking arm screw mounted to the imprinting cylinder rather than the imprinting block or chase.

FIG. 8 is a view taken along the lines 8—8 of FIG. 5.

FIG. 9 is an exploded view of an imprinting block or chase in accordance with the invention.

FIG. 10 is a perspective view of an imprinting block in accordance with the invention.

Referring to FIG. 1 a schematic diagram of a typical rotary printing press 1 is shown. Note side frame 2, ink tray 3, ink fountain roller 4, ink ductor roller 5, distributor roller 6, rubber distributor roller 7, vibrator roller 8, form roller 9, form roller 10, numbering roller 11, printing or plate cylinder 12, printing impression roller 13, numbering impression roller 14, and feed pin rollers 15 and 16 all mounted on bed 17 in which the electrical activating mechanism is contained.

The subject invention relates to a unique printing or plate cylinder adapted for receipt of a removable imprinting block or chase. The invention may be used in rotary presses such as illustrated in FIG. 1, in collators, and in other suitable equipment. As shown in FIGS. 1 through 6, imprinting cylinder 20 is shown with cavity, slot, or cut out portion 21. Cavity 21 has vertical wall 22, slanted wall 23, end wall 24, base 25, and opening 26.

The imprinting block or chase 30 is shown in FIGS. 2 through 6 inserted in the imprinting cylinder 20. In FIGS. 8 through 10 the imprinting block or chase 30 is shown by itself in more detail.

The imprinting block or chase 30 includes locking arm or lever 31 with pin receiving hole 32. Type block pad or Plate 33 with curved upper surface 33*a* is fixed to the base 34 of imprinting block 30 by suitable means such as screws 35 and 36 which extend through holes 37 and 38 and their mating holes 39 and 40.

Hot metal cast type slugs 41 have broader type faces 41*a*, narrower ends 41*b*, and tapered sides 41*c*. As noted previously, any suitable hot metal cast type slugs may be used in the subject invention. Tapered hot metal cast type slugs 41 are retained in the imprinting block or chase 30 by means of clips 42 which are fixed to the upward extending flanges 43 and 44 by suitable means such as screws 45, 46, 47, and 48 acting through aligned holes 49 and 50, 51 and 52, 53 and 54, and 55 and 56 respectively.

When the tapered hot metal cast type slugs 41 are positioned over the type block pad 33, the ends 41*b* of the hot metal cast type slugs 41 conform to the curvature of the surface 33*a* of the type block pad 33. The taper of the hot metal cast type slugs 41 is specially designed so that when the imprinting block or chase 30 is positioned in the imprinting cylinder 20 the curvature of the type faces 41*a* parallels the curvature of the imprinting cylinder 20.

Pads 57 of leather or rubber or other suitable material may be inserted under clips 42 to assure a close fit of clips 42 against the shoulders 41*d* of hot metal cast type slugs 41.

Wedges or plates such as plate 58 may be used to assure a tight fit of the tapered hot metal cast type slugs 41 against the wall 44*a* of the upstanding flange 44 of the imprinting block or chase 30, prior to attachment of the clips 42 to the flanges 43 and 44. After attachment of the clips 42 to the flanges 43 and 44, the wedges 58 may be removed. More than one wedge or plate may be used.

Screw 59 may be provided to assure a tight fit of the tapered hot metal cast type slugs 41 between the upstanding flanges 43 and 44 of the imprinting block 30 either with or without the utilization of wedges or plates such as plate 58. If the wedge 58 is used with the screw 59, the wedge 58 may be provided with depression or cut out portion 58*a* to receive the screw 59 to hold the wedge in position.

The locking arm or lever 31 is screw mounted to the imprinting block or chase 30 by means of the screw 60. The screw 60 may be fixed to the locking arm or lever 31 by any suitable means such as welding or pin 61 inserted through holes 62 and 63 and aligned hole 64 in the head 60*a* of screw 60. The screw 60 screws into the hole 65 of the imprinting block 30.

The type is readily changed by removing the clips 42 from the imprinting block 30, removing the tapered hot metal cast type slugs 41, inserting new hot metal cast type slugs, and replacing the clips 42.

After the tapered hot metal cast type slugs 41 are assembled in the imprinting block or chase 30, the imprinting block 30 is inserted into the imprinting cylinder 20 by sliding it into the cavity 21 through the opening 26 so that the slanted wall 66 of the imprinting block 30 mates with the slanted wall 23 of the cavity 21. The locking arm or lever 31 is then pivoted to the position shown in FIGS. 2 through 6. As the locking arm or lever 31 is pivoted to the position shown in FIGS. 2 through 6, the screw 60 unscrews from the imprinting block 30, and the locking arm or lever 31 is pressure fitted against the vertical wall 22 thus locking the imprinting block 30 in the cavity 21 of the imprinting cylinder 20. To retain the locking arm or lever 31 in locked position, spring loaded pin 67 may be provided to coact with the pin receiving hole 32 in locking arm or lever 31 when the locking arm or lever 31 is pivoted into locked position. (Other suitable means for retaining the locking arm or lever 31 in locked position may be used.) In application, to unlock the imprinting block 30, the spring loaded pin 67 is lifted up into inoperative position with an appropriate tool, and the locking arm or lever 31 is pivoted to open position. With the pin 67 in the hole 32 the locking arm or lever 31 can not accidentally vibrate out of locked position.

To remove the imprinting block 30 from the imprinting cylinder 20, the pin 67 is lifted out of the hole 32, the locking arm or lever 31 is pivoted clockwise out of contact with vertical wall 22 to unlocked position, and the imprinting block 30 is slid out of the imprinting cylinder 20 through the opening 26.

In another embodiment of the invention shown in FIG. 7, the locking arm 70 is screw mounted by screw 71 to the imprinting cylinder 120 rather than to the imprinting block 30. The principles of this embodiment are the same as for the above described embodiment of FIGS. 2 through 6. Note imprinting block 130, cavity 121, hot metal cast type slugs 141, clips 142, plate or wedge 158, screws 145, 146, 147, and 148, and spring loaded pin 167.

The locking arm or lever 70 may be pneumatically or hydraulically operated.

Any suitable number of cavities and imprinting blocks may be spaced around the imprinting cylinder.

Although the invention has been described in detail and certain specific terms and languages have been used, it is to be understood that the present disclosure is illustrative rather than restrictive and that changes

and modifications may be made without departing from the spirit or scope of the invention as set forth in the claims appended hereto.

Having described my invention, what I desire to secure by Letters Patent of the United States is:

1. An imprinting cylinder including at least one removable imprinting block and structure defining at least one cavity in the imprinting cylinder in which each removable imprinting block is adapted to slide into a cavity in the imprinting cylinder and means for locking each imprinting block into printing position within its associated imprinting cylinder cavity in which the structure defining each cavity includes an opening for receipt of an imprinting block, an end wall, a flat base, one vertical side wall, and one slanted side wall and in which each imprinting block has a vertical side wall and a slanted side wall which mates with the slanted side wall of the imprinting cylinder and in which the means for locking each imprinting block into printing position within its associated imprinting cylinder cavity includes a locking arm screw mounted on the vertical side wall of the imprinting block to effect a pressure fit against the vertical side wall of the imprinting cylinder cavity as it is unscrewed from the imprinting block.

2. An imprinting cylinder as described in claim 1 including means for retaining the locking arm in locked position.

3. An imprinting cylinder as described in claim 2 in which the means for retaining the locking arm in locked position includes structure defining a hole in the handle of the locking arm and spring loaded pin means extending from the vertical side wall of the imprinting cylinder cavity for coacting with the hole in the handle of the locking arm.

4. An imprinting cylinder as described in claim 2 including upward extending flanges on each side of the imprinting block, a curved type block pad fixed over the base of the imprinting block, and tapered hot metal cast type slugs positioned over the type block pad and between the upward extending flanges to effect a type surface with a curvature paralleling the curvature of the imprinting cylinder.

5. An imprinting cylinder as described in claim 4 including removable means for retaining the tapered hot metal cast type slugs over the type block pad and between the upward extending flanges of the imprinting block.

6. An imprinting cylinder as described in claim 5 in which the tapered hot metal cast type slugs have shoulders extending from their ends and the removable means for retaining the tapered hot metal cast type slugs over the type block pads and between the upward extending flanges of the imprinting block includes clips extending over the tapered hot metal cast type slug shoulders and removably fixed to the upward extending flanges of the imprinting block.

7. An imprinting cylinder as described in claim 6 including pads between the clips and the tapered hot metal cast type slug shoulders to provide for pressure by the clips against the tapered hot metal cast type slug shoulders in the event of tolerance variations.

8. An imprinting cylinder as described in claim 6 including means for holding the tapered hot metal cast type slugs against an inner wall of an upward extending flange of the imprinting block and for preventing lateral movement of the tapered hot metal cast type slugs between the upward extending flanges of the imprinting block prior to the fixing of the clips to the upward extending flanges of the imprinting block.

9. An imprinting cylinder as described in claim 8 in which the means for holding the tapered hot metal cast type slugs against an inner wall of an upward extending flange of the imprinting block and for preventing lateral movement of the tapered hot metal cast type slugs between the upward extending flanges of the imprinting block prior to fixing the clips to the upward extending flanges of the imprinting block includes at least one wedge placed between the tapered hot metal cast type slugs and the upward extending flanges of the imprinting block

10. An imprinting cylinder as described in claim 8 in which the means for holding the tapered hot metal cast type slugs against an inner wall of an upward extending flange of the imprinting block and for preventing lateral movement of the tapered hot metal cast type slugs between the upward extending flanges of the imprinting block prior to fixing the clips to the upward extending flanges of the imprinting block includes screw means extending through at least one upward extending flange of the imprinting block said screw means being adjustable to exert pressure against the side of the tapered hot metal cast type slug against which it abuts.

11. An imprinting cylinder including at least one removable imprinting block and structure defining at least one cavity in the imprinting cylinder in which each removable imprinting block is adapted to slide into a cavity in the imprinting cylinder and means for locking each imprinting block into printing position within its associated imprinting cylinder cavity in which the structure defining each cavity includes an opening for receipt of an imprinting block, an end wall, a flat base, one vertical side wall, and one slanted side wall and in which each imprinting block has a vertical side wall and a slanted side wall which mates with the slanted side wall of the imprinting cylinder and in which the means for locking each imprinting block into printing position within its associated imprinting cylinder cavity includes a locking arm screw mounted on the vertical side wall of the imprinting cylinder cavity to effect a pressure fit against the vertical side wall of the imprinting block as it is unscrewed from the vertical side wall of the imprinting cylinder cavity.

12. An imprinting cylinder as described in claim 11 including means for retaining the locking arm in locked position.

13. An imprinting cylinder as described in claim 12 in which the means for retaining the locking arm in locked position includes structure defining a hole in the handle of the locking arm and spring loaded pin means extending from the vertical side wall of the imprinting cylinder cavity for coacting with the hole in the handle of the locking arm.

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