March 8, 1938. W. F. HUCK 2,110,154

STEREOTYPE PLATE CASTING MOLD

Filed Dec. 31, 1934

Fig. 1.

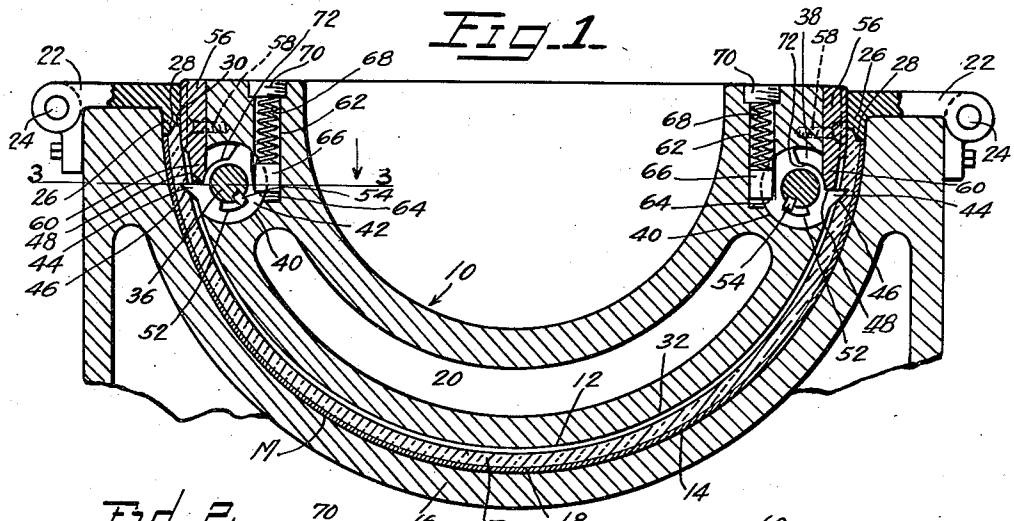


Fig. 2.

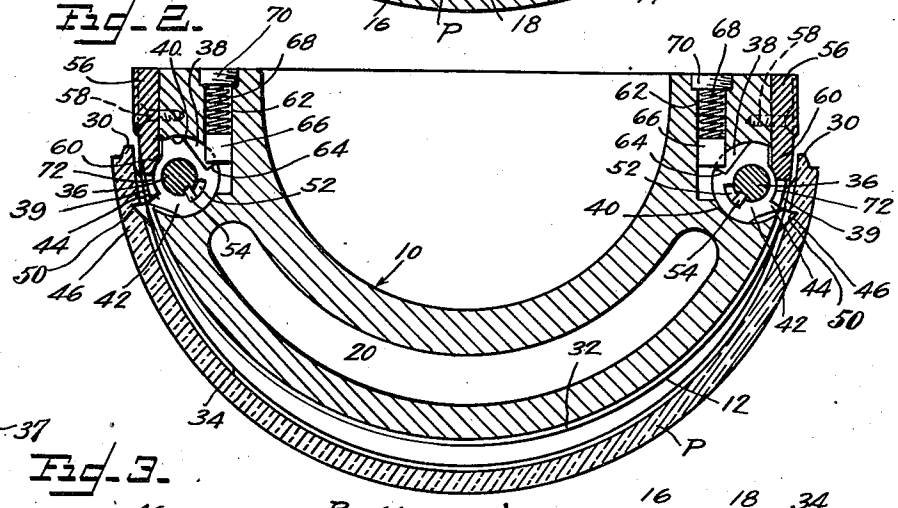


Fig. 3.

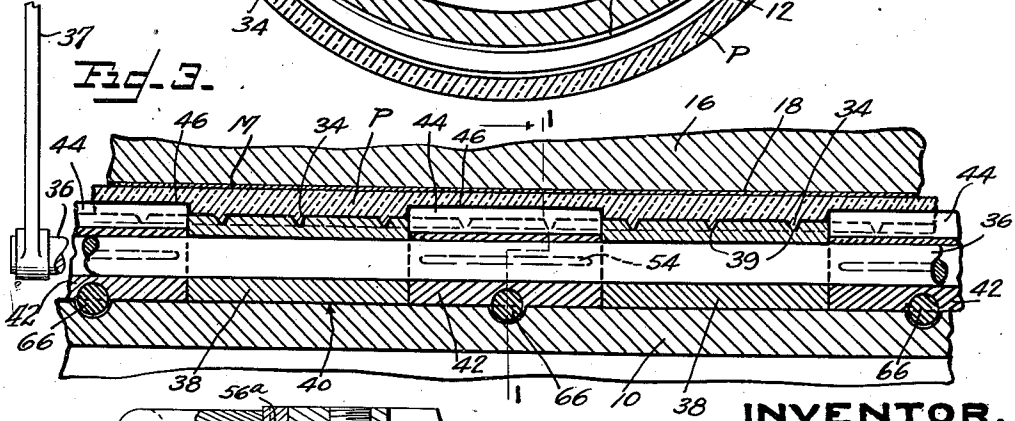
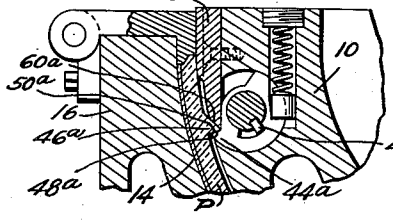


Fig. 4.



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Patented Mar 8, 1938

2,110,154

UNITED STATES PATENT OFFICE

2,110,154

STEREOTYPE PLATE CASTING MOLD

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Application December 31, 1934, Serial No. 759,983

6 Claims. (Cl. 22—5)

This invention relates to printing plate casting mechanism and especially curved stereotype printing plates to be employed in rotary printing machines, and to a method of casting such plates.

The progressively increasing demand for higher operating speed in modern rotary newspaper printing machines, particularly newspaper printing presses, necessitates the provision of improved means for more securely locking or clamping the conventional curved stereotype printing plates to the form or plate cylinders thereof. Heretofore these plates were secured to the plate cylinders by clamping the curved terminals of each plate to the cylinder, and the plates were held against movement around the periphery of the cylinder by abutting the straight or longitudinal terminals of the plates against margin bars secured to the peripheral portion of the cylinder and extending longitudinally thereof. With such construction and arrangement, the margin bars held the plates against movement around the cylinders, but these bars did not secure the plates against tangential or radial movement from the cylinders such as may be produced by the action of centrifugal force when the printing cylinders are rotated at relatively high operating speeds.

Recently means have been provided to secure the straight or longitudinal edges of the printing plates to the longitudinally extending margin bars carried by each printing cylinder, in addition to the usual or conventional plate clamping mechanism heretofore referred to, thereby more securely locking or clamping the plates to the printing cylinder. Such method, construction and arrangement are disclosed in my co-pending application Serial No. 759,982 filed December 31, 1934, now matured into Patent No. 2,050,950, dated Aug. 11, 1936, and in this disclosure the employment of curved stereotype printing plates having recesses or shoulders formed therein is contemplated. The longitudinal edges of the margin bars and the straight longitudinal edges of the printing plates are constructed and arranged for interfitting engagement, and mechanism is provided to engage the recesses or shoulders of the printing plates and force the longitudinal edges of the plate into locking engagement with the longitudinal edges of the margin bars.

In order to insure the commercial employment of such printing plates, means must be provided for their production with sufficient economy to satisfy commercial requirements, and, therefore, an object of this invention is to provide means and method for casting curved stereotype printing plates having their straight or longitudinal edges constructed and arranged for interlocking engagement with the longitudinal edges of the margin bars carried on the peripheral portion of the printing cylinders, and the printing plates having recesses or shoulders formed therein during the casting operation.

Another object of this invention is the provision of mechanism for casting curved stereotype printing plates, the casting mechanism including means for forming lugs or recesses on or in the printing plates, and the lug or recess forming means being yieldable to permit the removal of the plate from the casting mechanism.

A more specific object of my present invention is the provision of a casting mold having a casting chamber constructed and arranged to produce curved stereotype printing plates having projections formed on the longitudinal or straight edges thereof, and members operably supported by the mold to form lugs or recesses on or in the printing plates adjacent the said projections and yieldable to permit the removal of the printing plates from the mold.

A further object of this invention is the provision of a mechanism for casting curved stereotype printing plates, the casting mechanism including members for forming on or in the printing plates lugs or recesses having shoulders, and the lug or recess forming member being yieldable to permit the removal of the printing plates from the casting mechanism, and means for moving the yieldable lug or recess forming members.

It is also an object of this invention to provide printing plate casting mechanism of generally improved construction and arrangement, whereby the device will be simple, durable and inexpensive in construction, as well as convenient, practical, serviceable and efficient in its use.

With the foregoing and other objects in view, which will appear as the description proceeds, the invention resides in the combination and arrangement of parts, and in the details of construction hereinafter described and claimed, it being understood that various changes in form, proportions and minor details of construction may be resorted to within the scope of the claims without departing from the spirit or sacrificing any advantages of the invention.

For a complete disclosure of the invention, a detailed description of a preferred and modified form thereof will now be given in connection with

the accompanying drawing forming a part of this specification, wherein:

Figure 1 is a fragmental transverse sectional view, taken on line 1—1 of Figure 3, through a casting mold or box showing my invention applied thereto;

Figure 2 is a similar view in which the drag or back of the mold has been moved away from the cope or core, and the cast printing plate moved from the casting chamber;

Figure 3 is a fragmental longitudinal sectional view taken on the line 3—3 of Figure 1; and

Figure 4 is a transverse sectional view showing a modified form of my invention.

Referring to the drawing in which similar reference characters designate corresponding parts, 10 indicates the cope or core of a casting mold or box, and the outer arcuate face 12 of this cope and the inner arcuate face 14 of a drag or back 16 provide an arcuate casting chamber 18 therebetween. The cope 10 and drag 16 may be provided with a conventional means for cooling these members, such as the water jacket 20 provided in the cope 10. In order to remove the cast printing plate P from the mold, the drag or back 16 is mounted to swing away from the cope 10 in the conventional manner, and inasmuch as the means for supporting the cope and drag form no part of this invention and are well known and understood by those skilled in the art, they are not illustrated in this application.

Side gauges 22 are pivotally secured to the drag or back 16, as indicated at 24, and each side gauge 22 is provided with an inner flange 26 which extends into the casting chamber 18 between the cope 10 and drag 16 to provide the side terminals of the casting chamber. The flange 26 of each side gauge 22 is undercut and beveled throughout its length, as indicated at 28, to provide means for casting beveled lugs or projections 30 on the inner portion of the longitudinal edges of the cast printing plate, as shown in Figures 1 and 2, and which will be more fully disclosed hereinafter. Arcuate grooves or channels 32 are formed at spaced intervals in the cope or core 10, as indicated in Figure 3, to form the conventional ribs 34 on the inner face of the printing plate P.

Shafts 36 are operably positioned at each side of the casting mold adjacent the straight edge terminals of the casting chamber, as indicated in Figures 1 and 2. Each shaft 36 having an operating handle or lever 37 secured thereto is rotatably mounted in tubular bearing members 38 received within longitudinally extending apertures or bores 40 formed in the cope or core 10, and these tubular bearing members 38 are spaced at desired intervals along the apertures 40, and each tubular member is shaped to form a continuation of the cope side wall of the casting chamber and has grooves 39 provided therein to form continuations of the rib forming arcuate grooves 32. A plurality of movable or yieldable members or sleeves 42 are mounted for limited rotation on each shaft 36, and are interposed longitudinally between the tubular bearing members 38. Each movable member or sleeve 42 is provided with a longitudinally extending projection or lug 44 which extends into the casting chamber 18 to provide recesses 46 in the inner face of the printing plate adjacent its longitudinal edges, as will be hereinafter more fully disclosed. Each projection or lug 44 is provided with a radially extending surface or shoulder 48, which forms a shoulder 50 at one side of each recess 46. In order to permit limited rotation of the movable sleeves 42 on their supporting shafts 36, each sleeve 42 is provided with an arcuate recess 52, and keys or feathers 54, secured to the shafts 36, extend into the arcuate recess 52, thus limiting the relative movement between the supporting shafts 36 and the rotatable sleeves 42. Plates 56 are secured at opposed sides of the cope by screws or other suitable securing means 58, and these plates are positioned to project into the longitudinal bores or apertures 40, as indicated at 60, to form portions of the side wall of the casting chamber 18. Bores or apertures 62 are formed in the cope at opposed sides thereof and intersect the longitudinal bores 40, and a shoulder or stop surface 64 is formed on each movable sleeve 42 and extends into each bore 62. A plunger 66 is slidably received within each bore 62 and is pressed into engagement with the shoulder or surface 64, formed on each sleeve 42, by a helical extension spring 68, and the opposed terminal of each spring 68 engages a stop screw or plug 70 which is screwed to the cope at one terminal of the bore 62. A portion of each movable sleeve 42 is cut away to provide an arcuate recess 72 in which the lower terminal 60 of each plate 56 projects, and the rotary movement of each movable sleeve 42 on the supporting shaft 36 in either direction is limited by the lower terminal of the plate 56 engaging the stop walls or shoulders formed at each side terminal of the arcuate recess 72. Any suitable means, such as hand wheel or lever, may be provided for rotating the shafts 36, and inasmuch as these members are common and understood by those skilled in the art they have not been illustrated in the drawing of this application.

In the form of the invention disclosed in Figure 4, each rotatable sleeve 42*a* has a lug or projection 44*a* extending therefrom defining a tangential face or shoulder 48*a*, and the lower terminal of each plate 56*a* is beveled, as indicated at 60*a*. With this arrangement, the tangential shoulder 48*a* of each sleeve 42*a* and lower beveled terminal 60*a* of each plate 56*a* forms on the printing plate P a lug or boss 46*a* having a shoulder 50*a* formed thereon.

In operation, assuming the components of the casting mechanism are in molding position, as indicated in Figure 1, molten metal is supplied in the usual way to the casting chamber in which the usual matrix M is positioned. After the metal has cooled to solidify it, the drag or back of the mold is moved away from the cope or core and the plate is then removed from the cope. The movement of the solidified or casted printing plate P from the cope causes its shoulders 50 to engage the projections 44 of the movable sleeve 42 and move them against the influence of the spring 68 to the position indicated in Figure 2, thereby releasing the plate so it can be readily removed from the mold and conveyed to the desired destination. As the movable sleeves 42 move against the tension of the springs 68 no motion is imparted to the shafts 36, but if for any reason one or more of the movable sleeves should stick or bind in the mold in closed or casting position they can be forcibly moved to open or releasing position by rotating the shafts 36 until the key 66 engages the end walls of the arcuate recess 52, and continued rotation of the shaft forces the movable sleeve to open position thus releasing the plate to permit its removal from the mold. After the casted printing plate has been removed from the moid the movable sleeves are pressed back to normal casting posi-

tion by the springs 68, and after the drag has been moved to plate casting position the casting operation may be repeated.

The operation of the device depicted in Figure 4 is similar to that disclosed in Figures 1, 2, and 3, but the described components are arranged to cast printing plates having lugs on which shoulders 50a are formed instead of the recesses shown in the previously described mechanism.

Having thus described my invention what I claim is:

1. A printing plate casting mechanism, including a mold having a semi-cylindrical casting chamber constructed and arranged to cast semi-cylindrical stereotype printing plates for use on printing cylinders, each plate having the outer portions of its straight axial edges removed to form reduced locking projections on the straight axial edges and forming uninterrupted continuations of its inner arcuate surface, yieldable movable members operably supported by the mold to form a part thereof, means for normally biasing the movable members for moving portions thereof into the casting chamber so that said portions form locking shoulders on the inner face of the printing plate adjacent the locking projections, the movable members being yieldably movable from the casting chamber in response to movement of the printing plate to permit the removal of the printing plate from the casting chamber, and means for moving the movable members from the casting chamber independently of the movement of the cast plate, the shoulders and locking projections arranged for cooperative engagement with locking instrumentalities to lock the printing plate in printing position on the printing cylinder.

2. A printing plate casting mechanism, including a mold having a semi-cylindrical casting chamber constructed and arranged to cast semi-cylindrical stereotype printing plates for use on printing cylinders, each plate having the entire outer portions of its straight axial edges removed to form reduced locking projections on the straight axial edges and forming uninterrupted continuations of its inner arcuate surface, movable members operably supported by the mold to form a part thereof, shoulder-forming lugs carried by the movable members, means for normally biasing the movable members to move the shoulder-forming lugs into the casting chamber to form locking shoulders on the inner face of the printing plate adjacent the locking projections, the movable members being yieldably movable responsive to movement of the cast printing plate to move the shoulder-forming lugs from the casting chamber against the influence of the biasing means to permit the removal of the cast printing plate, and manually operable means for moving the yieldable members independently of the movement of the cast plate, the shoulders and locking projections arranged for cooperative engagement with locking instrumentalities to lock the printing plate in printing position on its printing cylinders.

3. A printing plate casting mechanism, including a casting chamber constructed and arranged to cast curved printing plates having projections formed on the straight edges thereof, movable members operatively supported by the casting mechanism adjacent the casting chamber, yieldable means for moving the movable members in position to form a part of the casting chamber, the movable members being constructed and arranged to form shoulders on the inner face of the printing plate adjacent the projections when in position to form part of the casting chamber and movable from the casting chamber against the influence of the yieldable means by the movement of the cast printing plate to permit the removal of the cast printing plate from the casting chamber.

4. A printing plate casting mechanism including a casting chamber constructed and arranged to cast curved printing plates having projections formed on the straight edges thereof, movable members operably supported by the casting mechanism adjacent the casting chamber, yieldable means for moving the movable members in position to form a part of the casting chamber, the movable members being constructed and arranged to form shoulders on the inner face of the printing plate adjacent the projections when in position to form part of the casting chamber and movable from the casting chamber against the influence of the yieldable means by the movement of the cast printing plate to permit the removal of the cast printing plate from the casting chamber, and means for moving the movable members independently of the movement of the cast printing plate.

5. A printing plate casting mechanism, including a cope having an arcuate outer face, a drag having an arcuate inner face, the arcuate faces of the cope and drag defining a semi-cylindrical casting chamber therebetween for casting a semi-cylindrical printing plate, beveled surfaces positioned at the straight terminals of the casting chambers to form beveled projections on the straight edges of the printing plate, rotatable members operably supported by the cope, projections formed on the rotatable members and normally extending into the casting chamber to form shoulders on the inner portion of the printing plate adjacent its beveled straight edges, yieldable means for biasing the rotatable members to positions in which their projections extend into the casting chamber.

6. A printing plate casting mechanism including a cope having an arcuate outer face, a drag having an arcuate inner face, the arcuate faces of the cope and drag defining a semi-cylindrical casting chamber therebetween for casting a semi-cylindrical printing plate, beveled surfaces positioned at the straight terminals of the casting chamber to form beveled projections on the straight edges of the printing plate, rotatable members operably supported by the cope, projections formed on the rotatable members, yieldable means for biasing each rotatable member toward a position in which its projection extends into the casting chamber to form a shoulder on the inner portion of the printing plate adjacent its beveled straight edge, the yieldable means permitting the rotatable members to be moved by the movement of the casted printing plate to positions in which the projections are withdrawn from the casting chamber to permit the removal of the casted plate therefrom, and means for moving the movable members independently of the movement of the printing plate.

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