Nov. 26, 1929. N. LITTELL 1,737,378

PROCESS OF AND APPARATUS FOR PREPARING PRINTING CYLINDERS

Original Filed July 29, 1925 6 Sheets-Sheet 1

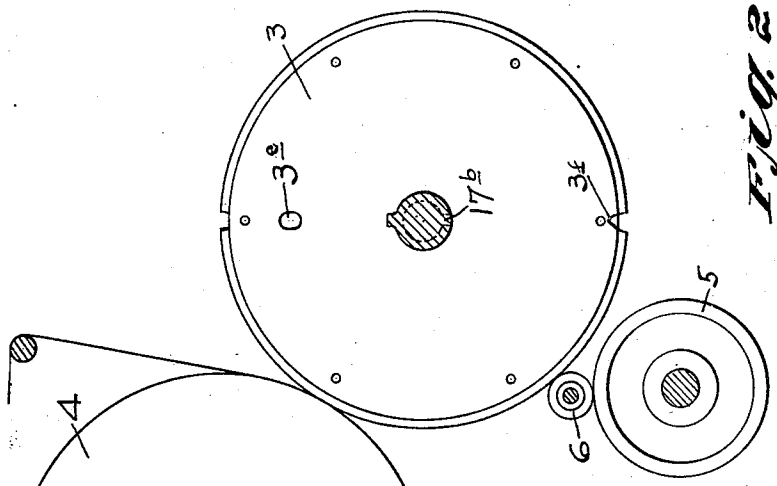


Fig. 2.

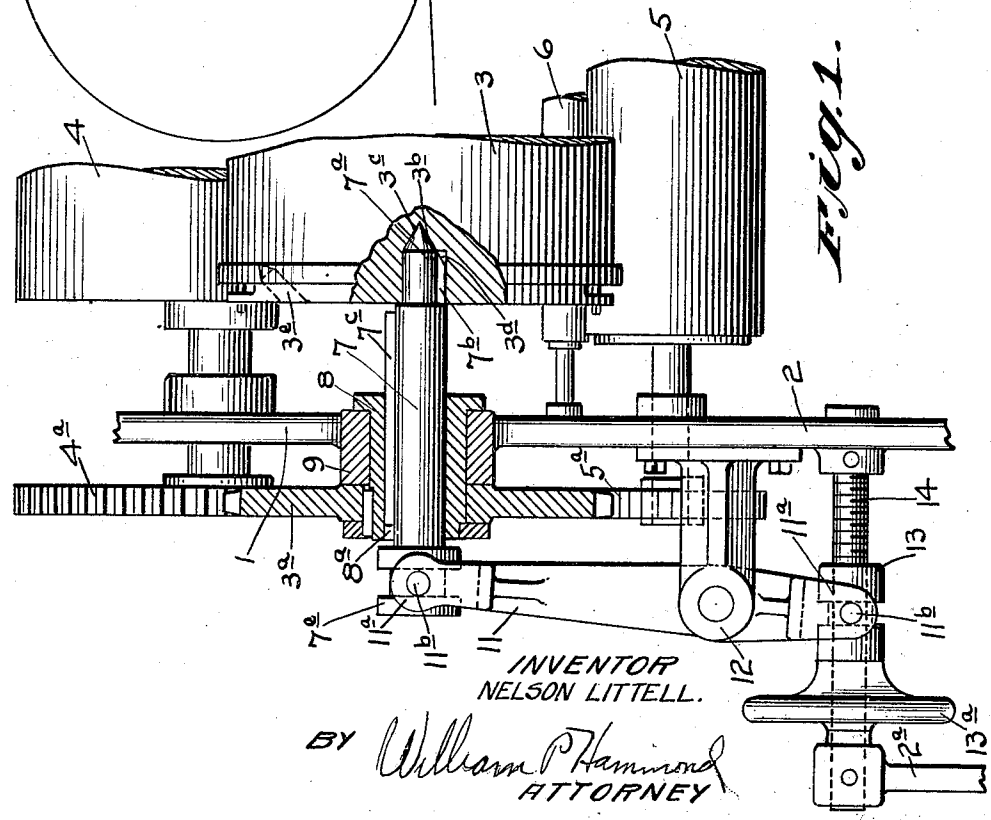


Fig. 1.

INVENTOR
NELSON LITTELL.

BY William P. Hammond
ATTORNEY

Nov. 26, 1929. N. LITTELL 1,737,378

PROCESS OF AND APPARATUS FOR PREPARING PRINTING CYLINDERS

Original Filed July 29, 1925 6 Sheets-Sheet 2

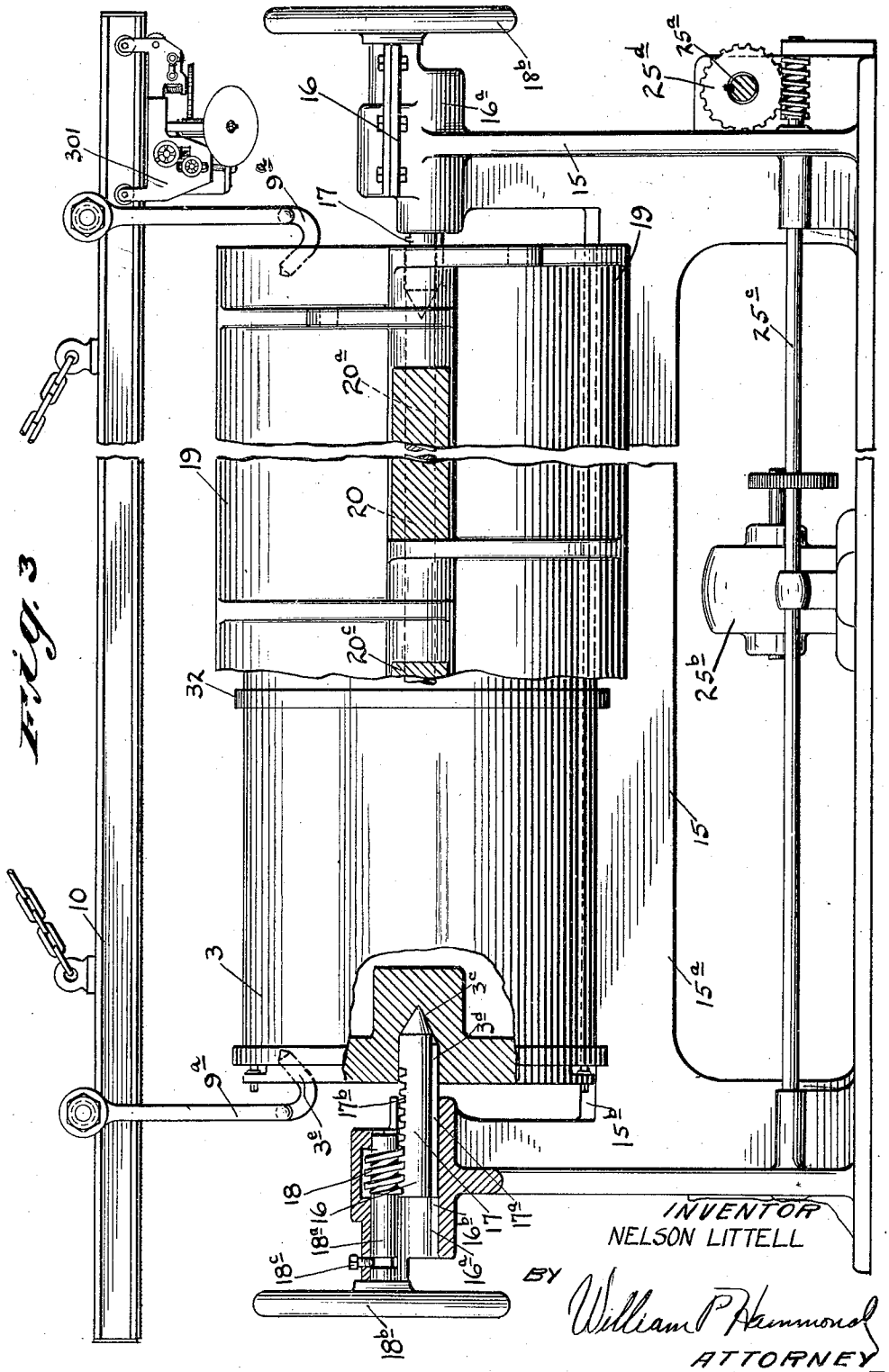


Fig. 3

INVENTOR
NELSON LITTELL

BY William P Hammond
ATTORNEY

Nov. 26, 1929. N. LITTELL 1,737,378

PROCESS OF AND APPARATUS FOR PREPARING PRINTING CYLINDERS

Original Filed July 29, 1925 6 Sheets-Sheet 3

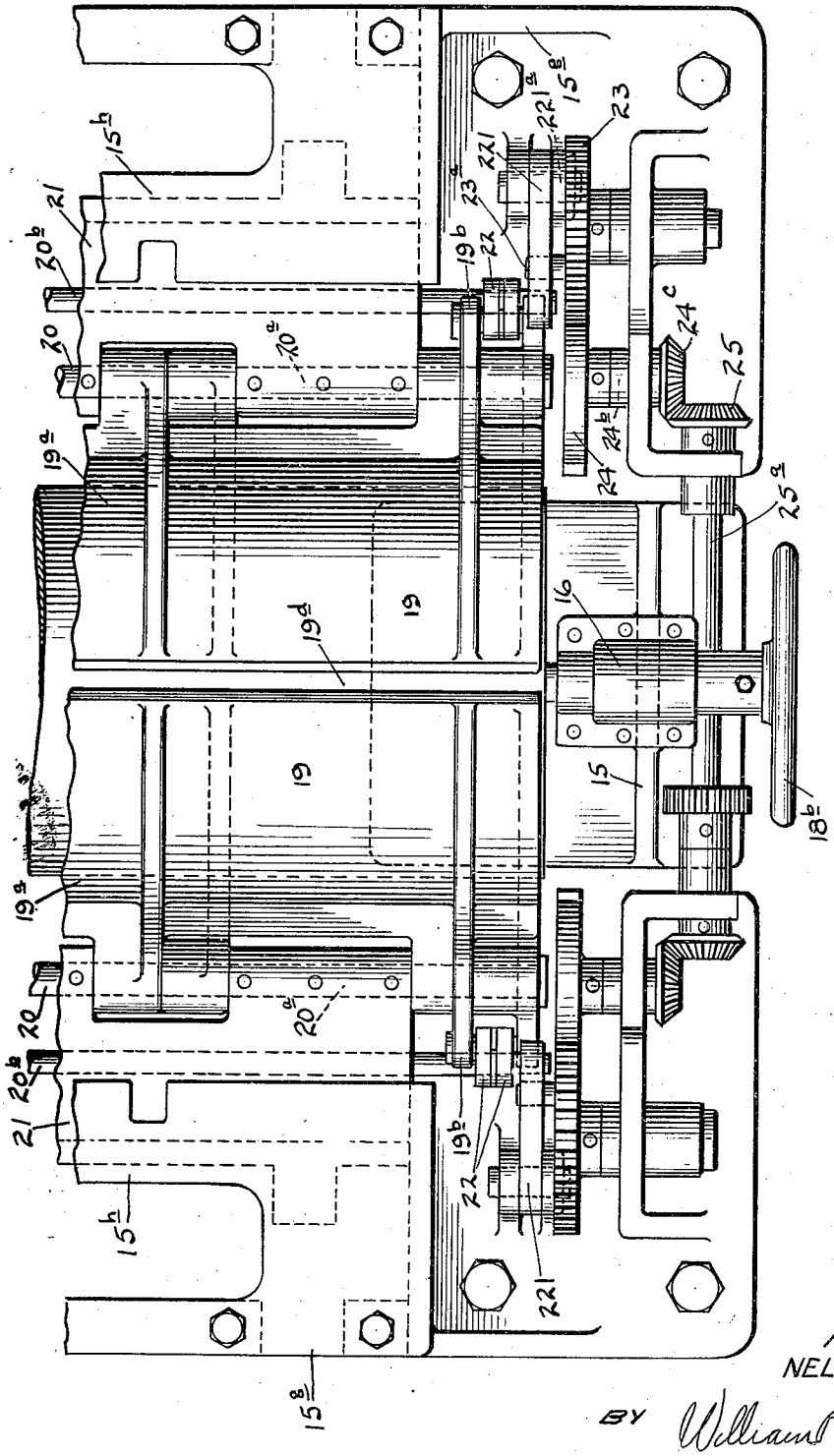


Fig. 4.

INVENTOR
NELSON LITTELL

BY William P. Hammond
ATTORNEY

Nov. 26, 1929. N. LITTELL 1,737,378

PROCESS OF AND APPARATUS FOR PREPARING PRINTING CYLINDERS

Original Filed July 29, 1925 6 Sheets-Sheet 4

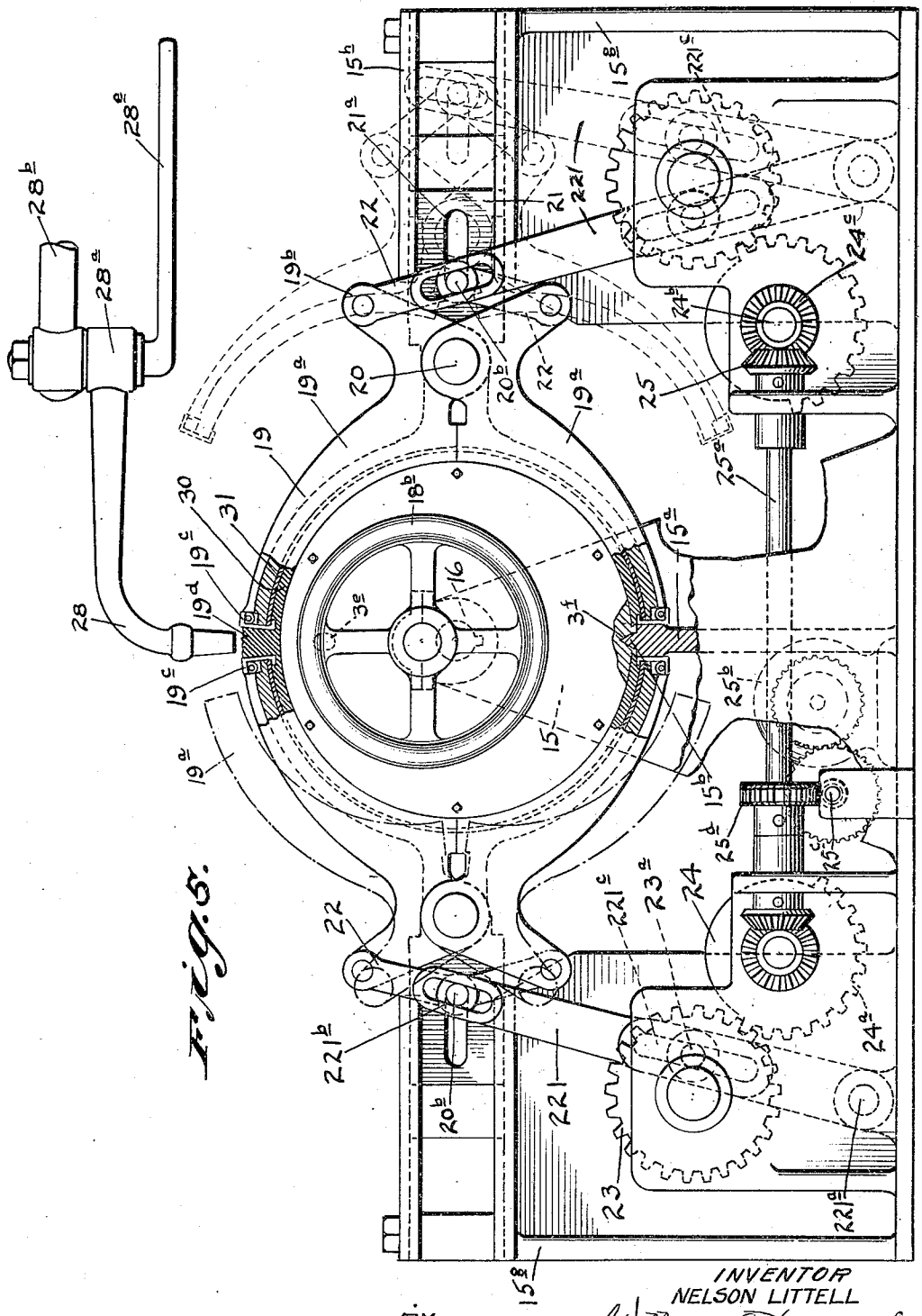


Fig. 5.

INVENTOR
NELSON LITTELL

BY

William P. Hammond
ATTORNEY

Nov. 26, 1929. N. LITTELL 1,737,378

PROCESS OF AND APPARATUS FOR PREPARING PRINTING CYLINDERS

Original Filed July 29, 1925 6 Sheets-Sheet 5

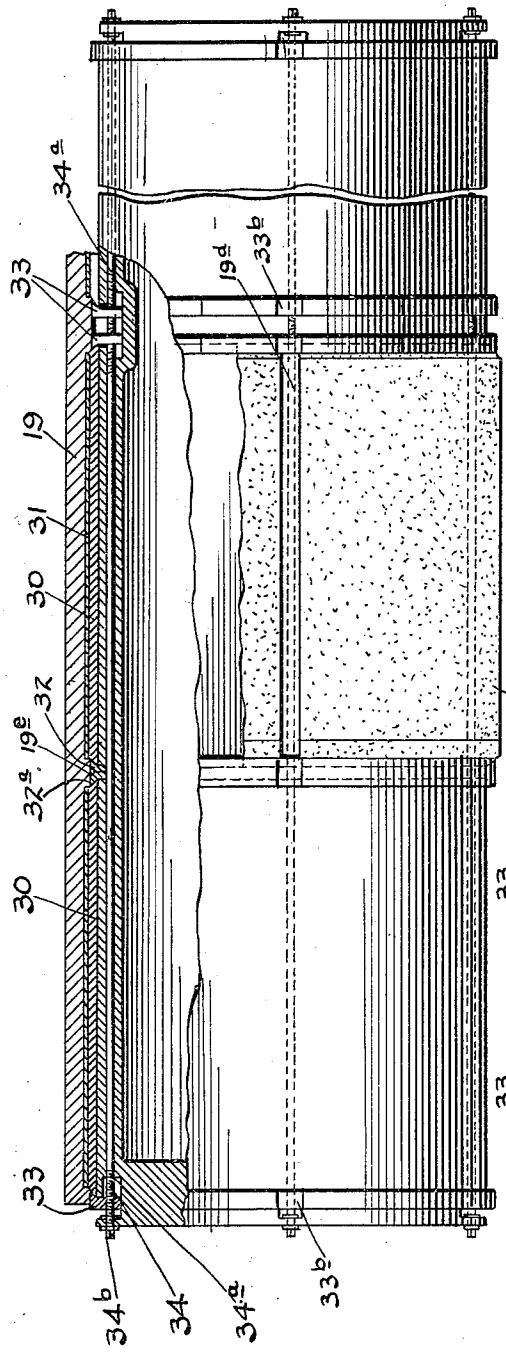


Fig. 6.

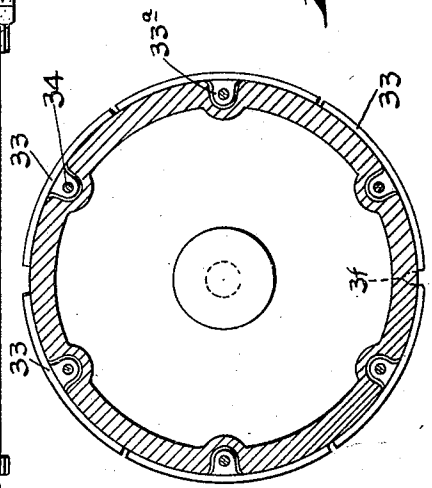


Fig. 7.

INVENTOR
NELSON LITTELL

BY William P. Simmons
ATTORNEY

Nov. 26, 1929. N. LITTELL 1,737,378

PROCESS OF AND APPARATUS FOR PREPARING PRINTING CYLINDERS

Original Filed July 29, 1925 6 Sheets-Sheet 6

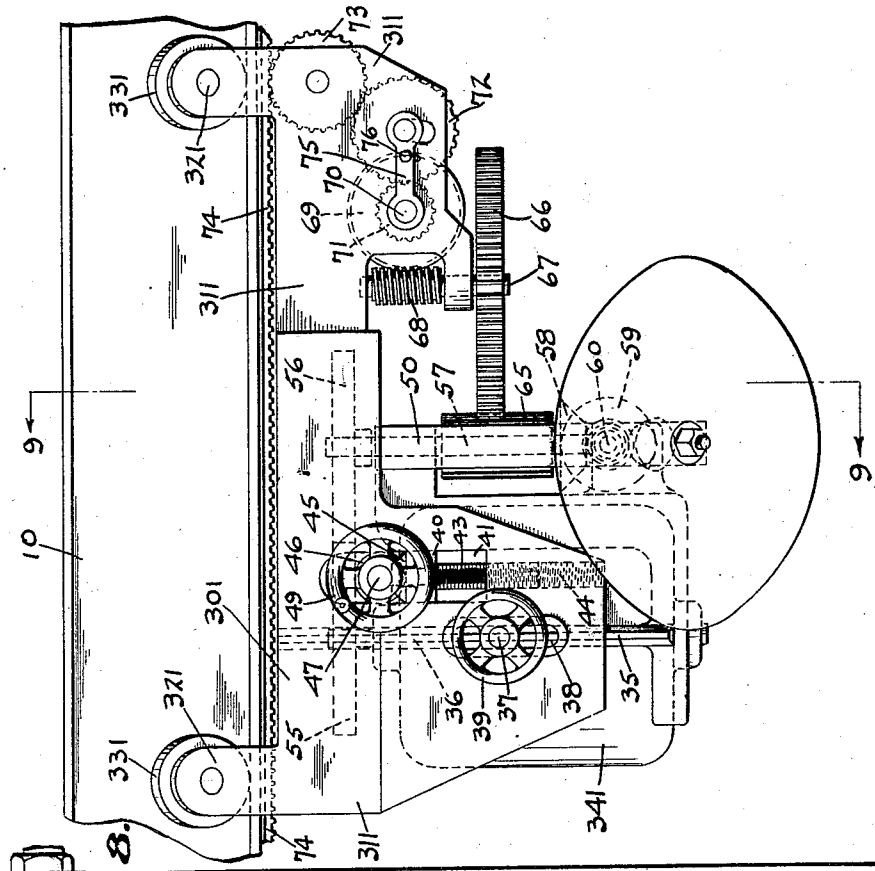


Fig. 8.

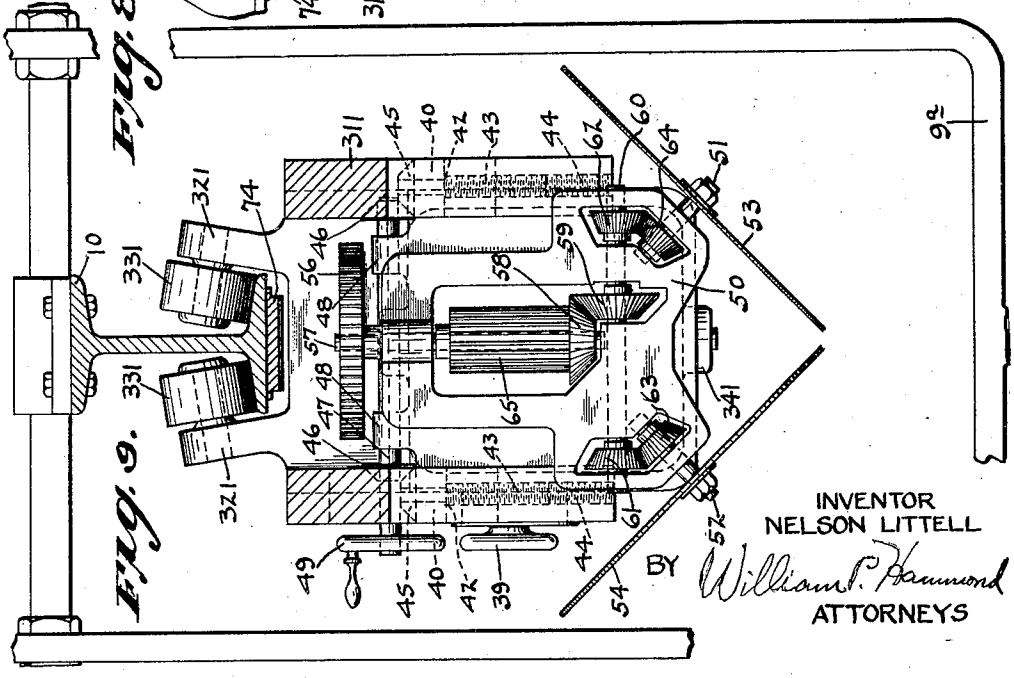


Fig. 9.

INVENTOR
NELSON LITTELL
BY William P. Hammond
ATTORNEYS

Patented Nov. 26, 1929 1,737,378

UNITED STATES PATENT OFFICE

NELSON LITTELL, OF NEW YORK, N. Y.

PROCESS OF AND APPARATUS FOR PREPARING PRINTING CYLINDERS

Application filed July 29, 1925, Serial No. 46,740. Renewed April 8, 1929.

This invention relates to printing, and more especially to the preparation of the type cylinder of a rotary press for printing newspapers, magazines, books, circulars and other matter.

It is an object of this invention to provide a rotary cylinder printing press with removable type cylinders, whereby the cylinders may be removed therefrom, stereotype plates cast upon the type cylinders, and the cylinders returned to the press for printing.

In one of the important features, the invention relates to an improvement in the process of stereotyping, whereby the stereotype plates may be cast directly upon the surface of the type cylinder of a rotary printing press. Heretofore, in the casting of stereotype plates, it has been customary to cast the plate around a cylindrical or semi-cylindrical core, remove the tails from the end or side edge of the semi-cylindrical plate either before or after the plate is removed from the core, remove the plate from the core, and finish the semi-cylindrical plate by shaving out its interior (concave side) so that it will fit truly upon the type cylinder of a rotary press. This finishing or shaving operation takes valuable time, and involves the use of expensive machinery.

It is the object of this invention to dispense with this finishing operation and reduce the time required to produce the completed stereotype plate mounted on the type cylinder, and to eliminate the use of the shaving machinery.

Another object of this invention is to decrease the thickness of the stereotype plate thereby effecting a saving in the amount of stereotype metal used.

It is a feature of this invention that the type-cylinder of a rotary printing press is made removable and used as the core in the stereotpye casting box, thereby casting the stereotype plates directly upon the type cylinder.

The type-cylinder may be provided with undercut recesses into which the molten stereotype metal will flow to anchor or clamp the plate upon the type-cylinder, or if the contraction of the particular stereotype alloy used is so great as to crack the plate if anchored in more than one place, only one recess may be provided for the stereotype metal to flow into, and the remaining edge of the plate may be clamped on the cylinder as in the present day practice.

The stereotype plate is supported by the type cylinder from the time it is cast until it is removed for remelting. Consequently, the thickness of the plate can be reduced to a great degree because the plate does not have to be thick enough to stand the strain of separate handling or the strain of finishing the interior thereof to the diameter of the type-cylinder.

To practice this invention the stereotype matrix is prepared in the usual way and is mounted in the casting box. If the casting boxes are vertical, a tier of two, or four, or more boxes is provided, according to the number of plates to be used upon the type-cylinder, means are provided for centering the type-cylinder vertically so as to cast a truly semi-circular plate in each casting box, the cylinder is revolved to cast plates upon opposite sides thereof, and the tails or gates removed, and the cylinder within the plates cast and clamped thereon is mounted in the press ready for printing. A preferred embodiment is, however, to provide a battery of horizontal casting boxes, as shown in the accompanying drawings, center the type-cylinder horizontally in the boxes, and cast the plates horizontally.

In addition to the above, various other objects and advantages will appear as the description of the invention proceeds.

Referring now to the drawings, which illustrate one method by which the invention may be practiced and one form of embodiment of apparatus for carrying out the method,—

Fig. 1 is a detail part sectional view of one side of a printing press showing one way of removably mounting the type-cylinder therein.

Fig. 2 is a diagrammatic view showing the relation of the type cylinder to the other parts of the press.

Fig. 3 is a part sectional side elevation of a portion of the casting machine with parts removed, for greater clearness, showing the type-cylinder being mounted therein.

Fig. 4 is a plan view of one end of the casting machine.

Fig. 5 is an end view of the casting machine, showing in dotted lines one of the casting boxes in open position.

Fig. 6 is a top plan view of the type cylinder and casting box with portions broken away to show details of the construction thereof.

Fig. 7 is a sectional view of the cylinder shown in Fig. 6.

Fig. 8 is a side elevational view of the mechanism used for trimming the gates or risers from the stereotyped plates.

Fig. 9 is a sectional view of the same machine, taken on the line 9—9 of Fig. 8.

In the form of embodiment chosen to illustrate the invention, a rotary cylinder printing press 1, comprising the usual side frames 2 between which the printing cylinders 3, impression cylinders 4, inking rollers 5, and transfer rollers 6, etc., are mounted, and driven in suitably geared relation by the gears 3^a, 4^a, 5^a, etc., is provided with means for permitting removal from and remounting of the type or printing cylinders 3 in the press and for preserving the gearing relation thereof when removed and remounted.

The means provided comprises a pair of longitudinally movable trunnions 7 mounted in bearings 8, rotatably carried in the journals 9 on the frame members 2 at each side of the press, the ends 7^a of which are adapted to extend into centering holes 3^b provided with conical centering portions 3^c in each end of the type cylinders 3. To preserve accurate registry and driving between the type cylinder and the other parts of the press, the ends 7^a of the trunnions 7 are provided with feathers 7^b and the holes 3^b are provided with key ways 3^d, while the major portion of the trunnions 7 are provided with keys 7^c sliding in key ways 8^a in the bearings 8, so that the cylinders 3 are always replaced in the press in exactly the relation in which they were removed therefrom and are always driven or rotated in this relation when the gears 3^a are driven.

For supporting the type cylinders 3 when removed from the press 1, the cylinders 3 are provided with openings 3^e in each end thereof, adapted to receive the hooks 9^a of a traveling crane or the like 10 by which the type cylinders may be moved back and forth from the printing press to the casting machine.

To slide the trunnions 7 into or out of the holes 3^b in the cylinders 3, levers 11 are pivoted at 12 to each of the side frames 2 and are provided at each end with forks or yokes 11^a carrying pins 11^b adapted to cooperate with the grooves in the collars 7^e fixed on the trunnions 7 and with grooves in the collar 13, respectively, to permit free rotation of the collars but to impart longitudinal movement from one to the other. The collars 13 are rotatable by means of a hand wheel 13^a on the screw shafts 14, which is fixedly mounted between the frames 2 and supplemental frames 2^a, to move the collars 13 toward or away from the frame members 2 and swing the levers 11 around their pivots 12 to move the trunnions 7 into or out of the cylinders 3. By this means the type cylinders 3 may be quickly released and removed from the printing press and remounted therein, without losing the alignment and registry thereof with the other parts of the press.

The casting machine comprises a substantially U-shaped supporting frame 15 having centering means 16 at the top of each leg of the U substantially like the head and tail stock of a lathe. In the form of embodiment illustrated, these centering devices comprise a pair of studs 17 mounted for longitudinal movement in the bearings 16^a on the frame 15. The studs 17 are each provided with a key 17^a, which slide in key ways 16^b in the bearing 16^a and also cooperate with the key ways 3^d in each end of the type cylinders. The ends of the studs 17 are formed into a cone to cooperate with the conical seats 3^c in the cylinder to effect true centering of the cylinder in the casting machine. For moving the studs 17 in and out of the bearings 16^a the studs are formed with a worm rack 17^b on the top and the bearings 16^a carry a worm wheel 18 which is mounted on rotating shafts 18^a controlled by the hand wheels 18^b at each end of the casting machine. The bolts 18^c riding in a groove in the shaft 18^a prevent longitudinal shifting of these shafts.

As a further means of support for the type cylinder 3, the frame of the casting machine may be provided with a central vertical cross beam 15^a which terminates in an inverted V-shaped ridge 15^b running longitudinally of the casting machine, and the cylinder 3 may be provided along one side with a corresponding groove 3^f adapted to rest on the ridge 15^b, so that the cross beam 15^a closes one side of each casting box during the casting operation.

The frame of the casting machine extends outward at each side of the central crossbeam 15^a and the centering devices 16, and forms pedestals 15^g extending longitudinally of the machine along each side thereof, from which the casting boxes 19 are operated. Separate casting boxes are used on each side of the machine and as the one side is a duplicate of the other, the box and the means for operating the same on only one side of the machine will be described. In Fig. 5 the casting box on one side of the machine is shown in dotted lines in open position, while in full lines the casting boxes on both sides are shown in closed or casting position. It will be understood that in use the casting boxes are moved simultaneously from open to

closed position, or vice versa, and that at any given time they occupy the same relative position at each side of the machine. The casting boxes proper may comprise one long box with or without suitable separating means for dividing it into individual stereotype lengths, into which the stereotype matrices may be clamped, or it may consist of a plurality of separate boxes of the size of the ordinary stereotype plate. Each of the boxes 19 is divided horizontally at its midpoint into two quadrants 19^a which combine to make a semi-cylindrical casting box. The two quadrants 19^a of the box are pivoted on a rod 20 which is held in the slides 21 and passes through openings 20^a therein. The slides 21 are slidable back and forth in the guides 15^h on the pedestals 15^g. For opening and closing the casting boxes, lugs 19^b are provided on the quadrants 19^a extending beyond the pivot rod 20 and a toggle link 22 extends from each lug 19^b to a pivot rod 20^b which is in horizontal alignment with the rod 20. The rod 20^b is mounted for relative movement in slots 21^a in the slides 21, so that when the rod 20^b is slid to the rear of the slot 21^a, away from the casting cylinder, the lugs 19^b are drawn toward each other by the links 22 and the halves 19^a of the boxes separated as indicated in dotted lines at the left of Fig. 5.

When the rod 20^b reaches the end of the slots 21^a, it carries the slides 21 rearward in the guide 15^h away from the cylinder 3 to draw the casting boxes 19 apart, as shown in the dotted lines at the right of Fig. 5, to strip the matrices 31 from the cast plates 30, and permit the cylinder 3 upon which the plates have just been cast to be removed and a new cylinder substituted.

Any suitable hand or automatic means may be utilized for opening and closing the boxes 19 and for moving them toward and away from the cylinder 3, it being preferred, however, to use a power driven automatic or semi-automatic means for this purpose. One form of embodiment of such means is shown in Figs. 4 and 5 of the drawings. In its preferred embodiment, this comprises levers 221 pivoted at 221^a on the base of the frame 15. An elongated slot 221^b is formed at the opposite end of each lever and is adapted to receive the ends of the rods 20^b to move these rods back and forth, and a second elongated slot 221^c is formed at about the midpoint of each lever. A pitman 23^a, mounted on a spur gear 23, extends into this slot and as the gear 23 is rotated, swings the lever about its pivot 221^a to move the rod 20^b and the rod 20 toward or away from the cylinder 3. The gears 23 are driven from mutilated gears 24 of the same size and pitch, which have teeth 24^a only on one half of their periphery, and these gears are driven through stud shafts 24^b from mitre gears 24^c which mesh with corresponding mitre gears 25, driven from a shaft 25^a by means of an electric motor 25^b through the worm shaft 25^c, and worm wheels 25^d. The worm shaft 25^c extends to each end of the machine and drives a worm wheel 25^d on a shaft 25^a at each end, so that similar mechanism is operated simultaneously at each end of the machine from the motor 25^b. The shaft 25^a extends to each side of the machine and operates a gear 25 at each side which, through mechanism similar to that described, operates the boxes 19 in unison. Clamps 19^c, of any suitable type, clamp the stereotype matrices 31 in the casting boxes.

A suitable pump and pot of stereotype metal (not shown) is provided with the nozzle 28 of the pump located, in operative position, so as to discharge the molten stereotype metal into the gate or gates 19^d between the top edges of the casting boxes. A plurality of nozzles 28 are preferably provided and they may be supplied with metal from the same pump or from a plurality of simultaneously actuated pumps so as to provide for simultaneous filling of the casting boxes along the entire machine with hot metal.

The nozzles 28 are preferably pivoted at 28^a to the conduits 28^b extending from the pump, and a handle 28^e is provided for each nozzle so that the nozzles may be turned out of the vertical line above the printing cylinder 3, so as not to interfere with the mounting or removal of the cylinder in the casting machine.

The gate or gates 19^d may be increased to any desired size and height to provide a suitable head or riser, to insure sound castings 30 and to remain molten long enough to permit gases to rise thereinto.

Fig. 6 shows in a part sectional plan view of a portion of the printing cylinder, a stereotype plate 30 cast thereon, and in section, a portion of one of the casting boxes 19 with the stereotype matrix 31 therein, the separating portions 19^e between the plates 30 and the means for clamping the plates 30 on the cylinder.

Various forms of means may be used for clamping or holding the cast plates on the cylinders. The cylinders may be provided with undercut grooves or holes so distributed as to permit proper shrinkage of the plates, and the plates may be cast so that the molten stereotype metal runs into these grooves and solidifies to hold the plate on the cylinder. I prefer, however, to provide the cylinder 3 with a series of fixed clamping rings 32 having undercut beveled edges 32^a which form one end of the casting box for each plate and under which the molten stereotype metal runs. The other end of each plate is held by a series of similarly shaped movable clamping rings 33 divided into forming sectors to permit movement thereof and movable longitudinally along the surface of the cyl-

inder 3 by means of the rods 34, which extend along the walls of the cylinder and are provided with oppositely pitched threads 34^a which cooperate with corresponding threads on the ears 33^a of the rings 33 to move the rings or sectors on each side toward or away from the fixed rings 32 when the rods 34 are turned by applying a key or wrench to the squared end 34^b thereof. The rings 33 are preferably divided into sectors corresponding to the number of rods 34 so that each rod controls an independent sector on each ring.

In the operation of the clamping rings, the rings 33 are set the distance from the ring 32 of a normal stereotype plate, and the plates are cast so that the molten metal forming each edge thereof runs under the undercut bevels on the rings 32 and 33. When the plate has cooled, the rings 33 may be adjusted for any shrinkage in the plate. By thus clamping the plates on the cylinder, similar to the way they are now clamped, the removal of the used plates for remelting is facilitated and it is possible at any time to change the make-up of any one or more sheets of the edition by removing a single plate and installing in its place a single plate carrying the desired changes, without having to cast new plates on an entire cylinder or remove the entire cylinder from the machine.

In the operation of the invention, assuming that an edition has just been finished, the press is turned to bring the parts of the printing cylinders 3 having the eyes 3^e therein, to the top. The crane 10 is brought into position over the press and the hooks 9^a are inserted in the eyes 3^e. The trunnions 7 are now withdrawn from each end of the cylinder 3 by manipulating the wheels 13^a, and the cylinder is swung out of the press, the clamping sectors are moved away from the edges of the plates by turning the rods 34, and the used plates are removed from the cylinder 3 for filing or remelting, and the cylinder stored on a convenient rack, preferably in a warm room, for use in the next edition of the paper. If desired, the sectors 33 may be loosened and the plates 30 removed from the printing cylinders 3 without removing the cylinders from the press, according to present day practice.

In preparing for a run of a paper or magazine, an edition of a book, or the like, the stereotype matrices 31 are prepared in the usual way, the casting boxes 19 are left in their open position, and the matrices, when finished, are clamped in the boxes by the usual type of clamps 19^c.

When the last matrix has been clamped in the boxes, the crane 10 brings a cylinder 3 over the casting machine, lowers it between the boxes 19 onto the support 15^a, the handwheels 18^b at each end of the machine are turned to push the trunnions 17 into the openings 3^b in each end of the cylinder 3 to center the same in the casting machine, and the motor 25^b is started to simultaneously close the boxes 19 on the cylinder. The rotation of the worm shaft 25^c and of the shafts 25^a rotates the mutilated gears 24, and when the teeth thereof come into mesh with the gears 23, the pitman 23^a, working in the slots 221^c, starts swinging the levers 221 toward the cylinder 3, which is mounted in the casting machine. The first effect of the swinging of the levers 221 toward the cylinder 3 is to move the rods 20^b in the slots 21^a toward the rod 20 and straighten the toggle links 22, which brings the quadrants 19^a of the casting boxes 19 toward each other to form a true semi-circle, and when the rods 20^b reach the inner end of the slots 21^a, the slides 21 and boxes 19 are moved forward against the cylinder 3. At the end of a half revolution of the gears 23, the boxes 19 are tightly pushed against the cylinder 3, the teeth 24^a of the gears 24 at this point pass out of mesh with the teeth of the gears 23 and during the next half revolution of the gear 24, the casting boxes are held firmly against the cylinder by the now stationary gears 23. During the closing of the boxes 19 on the cylinder, the nozzles 28 for the stereotype metal are moved into position over the cylinder 3 and, as soon as the movement of the gears 23 ceases, the pump or pumps are actuated to pump the molten stereotype metal into the gates 19^d and into the spaces between the boxes 19 and the cylinder 3 to form the stereotype plates 30. The speed of the gears 24 is timed so that during the idle half revolution this metal has time to set.

When the teeth 24^a of the gears 24 again come into mesh with the gears 23, the movement of the gears 23 swings the levers 221 about their pivots 221^a away from the cylinder 3. This moves the rods 20^b rearward in the slots 21^a to first swing the quadrants 19^a of the casting boxes around the rods 20 to the dotted line position to the left in Fig. 5 to first strip the matrices 31 from the cast plates 30, after which the continued swinging of the levers 221 moves the slides 21 rearward in the guides 15^h to move the casting boxes 19 away from the cylinder 3.

At the end of a half revolution, the boxes 19 are at their rearmost position (shown in dotted lines at the right in Fig. 5), and at this point the teeth 24^a of the gears 24 again pass out of mesh with the gears 23, leaving the boxes 19 clear of the cylinder. The interval consumed by the next half rotation of the gears 24 permits the cylinder 3 with the cast plates 30 thereon to be removed from the casting machine and a blank cylinder to be inserted, whereupon, when the teeth of the gears 24 again come into mesh with the teeth of gears 23, the casting boxes are again closed and moved against the new cyl-

inder by the next half revolution of the gear 23 and the casting operation is repeated.

When the desired number of printing cylinders has been prepared from the matrices in the boxes, new matrices may be inserted and a new set of cylinders 3 prepared for printing.

A machine 301 (see Figs. 8 and 9) may be used to remove the gate 19^d after the stereotype plates have been cast. This machine comprises a frame 311 having upwardly extending arms 321 on which rollers 331 are rotatably mounted. The rollers 331 are adapted to roll upon the upper surface of the flanges of the beam of the crane 10.

A motor 341 is mounted on a slidable carriage in the frame 311, the ridges 35 attached to the motor carriage engaging with the groove 36 in the frame 311 to permit vertical motion only. A bolt 37 passes through a slot 38 in the frame 311, limiting the vertical motion of the motor to the length of the slot 38, and a hand wheel 39 is threaded on the bolt 37, which, when turned down against the frame 311 of the machine, locks the motor with respect to the frame.

Lugs 40, attached to the motor 341, pass through slots 41 in the frame 311 and rest upon shoulders 42 formed by a reduced portion on the screws 43. Threaded holes 44 in the sides of the frame 311 receive the screws 43, and when the screws are rotated, they work up and down in the holes 44. Bevel gears 45 are attached to the upper ends of the screws 43, and mesh with bevel gears 46 attached to a shaft 47 mounted in bearings 48, attached to the motor 341. A crank wheel 49 is attached to the shaft 47, which, when turned, transmits motion to the screws 43 and raises or lowers the motor 34.

A bracket 50 is attached to the motor 341 and carries the shafts 51 and 52 to which the circular saws 53 and 54 are attached. A gear 55 is attached to the motor shaft and meshes with a gear 56 attached to the upper end of a vertical shaft 57, mounted in the bracket 50. A bevel gear 58, attached to the lower end of the shaft 57, meshes with another bevel gear 59, which is attached to the auxiliary horizontal shaft 60, and bevel gears 61 and 62 attached to the ends of the shaft 60, mesh with gears 63 and 64, which drive the saw shafts 52 and 51 respectively.

An elongated gear 65, attached to the vertical shaft 57, meshes with a gear 66, attached to a vertical stud shaft 67, mounted in the frame 311 of the machine. This shaft has a worm 68 which engages with worm wheel 69, attached to the shaft 70, mounted in the frame 311. A gear 71 is also attached to the shaft 70 and meshes with the clutch gear 72. Gear 72 also meshes with gear 73, which in turn meshes with the rack 74, attached to the bottom of the beam of the crane 10, to move the carriage 311 along the crane.

The clutch gear 72 is mounted in a movable bracket 75 pivoted on the shaft 70 and held by the pin 76. The gear 72 may be swung out of mesh with the gear 73 by releasing the pin 76 and rotating the bracket 75 about the shaft 70.

The operation of the sawing machine is as follows:

After the type cylinder has been cast, it is lifted out of the casting machine by the hooks 9^a, and while carried by the crane, the sawing machine may be operated. The motor and circular saws are first adjusted to the proper height by turning the crank wheel 49 and then locked in place by tightening the wheel 39. The motor is then started and by means of the gears 55, 56, 58, 59, 61, 62, 63 and 64, the saws are caused to revolve. The clutch gear 72 is then thrown into mesh with the gear 73 and the machine moves forward, motion being imparted to the gear 73 by means of the gears 55, 56, 65, 66, worm 68, worm wheel 69, gears 71 and 72. It will be noted that gear 65 is long enough to permit a vertical adjustment of the machine without getting out of mesh with the gear 66.

As the machine travels along, the saws 53 and 54 cut a groove along each side of the gates 19^d from one end of the cylinder 3 to the other, so that the gates can be readily lifted from the plates 30. The hooks 9^a are of a Y-shape to permit the sawing machine to pass from end to end of the beam of crane 10.

If desired, the gates 19^d may be removed from the plate by suitable sawing or cutting means, while the cylinder is still in the casting machine or any other form of means may be used for removing the gates. I prefer, however, to use the means described above for this purpose.

It will be noted that the risers or gates 19^d may be cut off while the cylinder 3 is carried by the crane 10 to the press. Arriving at the press, the cylinders are positioned in the press, the trunnions 7 moved into the openings 3^b, and the hooks 9^a removed and the crane moved away. When the last cylinder is in the press, the press is ready to start. No shaving and finishing of the inside of the stereotype plates is necessary, no clamping of the plates in positions difficult of access is necessary, and the thickness of the plate and the amount of stereotype metal used may be greatly reduced.

By casting all the plates on the cylinder at one operation, the number of casting machines and the number of casting operations may be reduced, conserving space and labor in the casting room and reducing the time between the last set-up and the starting of the printing presses.

The cylinders may be preheated or water cooled in any of the ways now commonly used in the art.

Instead of removing the printing cylinders

from the press, the press may be arranged to permit the casting of the stereotype plates on the cylinders in position in the press, or the cylinders may be shifted out of their printing position, without being wholly disconnected from the press, the plates cast thereon and the cylinders moved back into printing position in the press.

It will be readily appreciated that the machines and methods shown and described herein are to be considered as illustrative of, rather than limiting, the invention, and that various modifications and changes may be made in the methods and apparatus without departing from the spirit of the invention or the scope of the appended claims.

I claim:

1. The method of preparing a type cylinder of a printing press for printing, which comprises casting the standard size separated stereotype plates thereon.

2. The method of preparing a type cylinder of a printing press for printing, which comprises removing the cylinder from the press, casting separated printing plates thereon and reinserting the cylinder in the press.

3. The method of preparing a type cylinder of a printing press for printing which comprises removing the cylinder from its position in the press, casting separated printing plates thereon, and reinserting the cylinder in its position in the press.

4. The method of preparing a type cylinder of a printing press for printing which comprises removing the cylinder from the press, centering the cylinder in a casting machine, casting separated stereotype plates thereon, and reinserting the cylinder in the printing press.

5. The method of preparing a type cylinder of a printing press for printing which comprises removing the cylinder from the press, centering the cylinder in a casting machine, casting separated stereotype plates thereon, removing the risers from the cast plates, and reinserting the cylinder in the printing press.

6. The method of preparing a type cylinder of a rotary printing press for printing which comprises, removing the cylinder from the press, removing the old printing plates therefrom, casting new non-continuous printing plates thereon and reinserting the cylinder in the press in the same relative position with reference to the press from which it was removed.

7. The method of preparing a type cylinder of a printing press for printing which comprises, removing the cylinder from the press, centering the cylinder in a casting machine, casting separated stereotype plates thereon, removing the risers from the cast plates, and reinserting the cylinder with the plates cast thereon in the printing press in the same relative position with reference to the press from which it was removed.

8. The method of preparing a type cylinder of a rotary printing press, of the type described, for printing, which comprises removing the cylinder from the press without moving the driving gear therefor out of mesh, casting separated stereotype plates thereon, and reinserting the cylinder in the press in the same relative position from which it was removed.

9. The method of preparing a type cylinder of a rotary printing press, of the type described, for printing, which comprises removing the cylinder from the press, casting separated stereotype plates thereon, and reinserting the cylinder in the press without altering the relative position or driving relation of the cylinder to the remainder of the press.

10. As an article of manufacture, a type cylinder for rotary printing presses, with a plurality of separated stereotype plates cast thereon.

11. The method of casting stereotype plates, which comprises, removing the printing cylinder of a rotary printing press from the press, using the same as a core in the stereotype casting machine, and casting standard size separated stereotype plates thereon.

12. As an article of manufacture, a type cylinder for a rotary printing press, comprising the cylinder proper, and a plurality of semi-circular separated stereotype plates cast thereon and adapted to be supported thereby from the time of casting through the printing operation and until removed for filing or remelting.

13. In a rotary cylinder printing press, a frame, a printing cylinder, means to support said cylinder for rotation in said frame, means to drive said cylinder, and chuck means slidable through the driving means to disengage the cylinder from the supporting means to permit removal thereof without disturbing said driving means.

14. The method of producing stereotype plates, which comprises casting separated plates on a removable core, removing the core from the casting machine, and using it as the type cylinder in a rotary printing press.

15. The method of producing sterotype plates which comprises casting separated plates on a removable core, removing the core from the casting machine, and printing from the stereotype plates without removing the plates from the core.

16. The method of producing printing cylinders which comprises providing a core of the size of the desired cylinder, inserting said core in a stereotype casting machine, casting separated stereotype plates thereon,

removing the core with the cast plates thereon, and using same as a printing cylinder.

17. In a rotary cylinder printing press, means to removably mount a printing cylinder for rotation therein, comprising holes in the cylinder and trunnions on the frame movable into and out of said holes, means to drive said trunnions and means to preserve registry of the cylinder with the remaining parts of the press when removed from and inserted therein.

18. The method of preparing the printing cylinders of a rotary cylinder printing press for printing, which comprises removing the printing cylinder from the press, placing the cylinder in a stereotype casting machine, casting separated stereotype plates thereon, removing the cylinder from the casting machine with the plates thereon, sawing the risers from the cast plates during the movement of the cylinder to the printing press, and inserting the cylinder into printing position in the press.

19. The method of casting stereotype plates, which comprises removing the printing cylinder of a rotary printing press from the press, using the same as a core in the stereotype casting machine, and casting the stereotype plates thereon.

20. The method of producing printing cylinders which comprises providing a core of the size of the desired cylinder, inserting the core in a stereotype casting machine, casting stereotype plates thereon, removing risers from said plates and using the core with cast plates thereon as a printing cylinder.

In testimony whereof I have affixed my signature to this specification.

NELSON LITTELL.