May 21, 1957 G. KALDSCHMIDT 2,792,781

CYLINDER CHANGE MECHANISM FOR ROTARY SHEET PRINTING PRESSES

Filed May 14, 1953 4 Sheets-Sheet 1

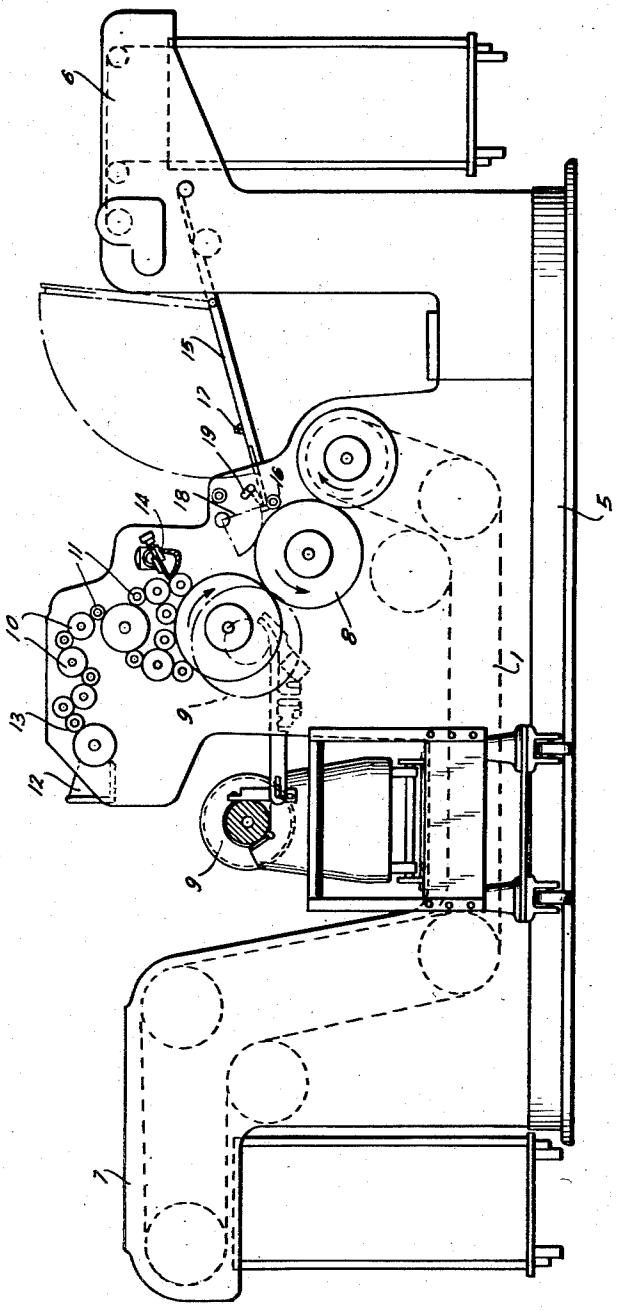


FIG. 1

INVENTOR.
GEORG KALDSCHMIDT

BY

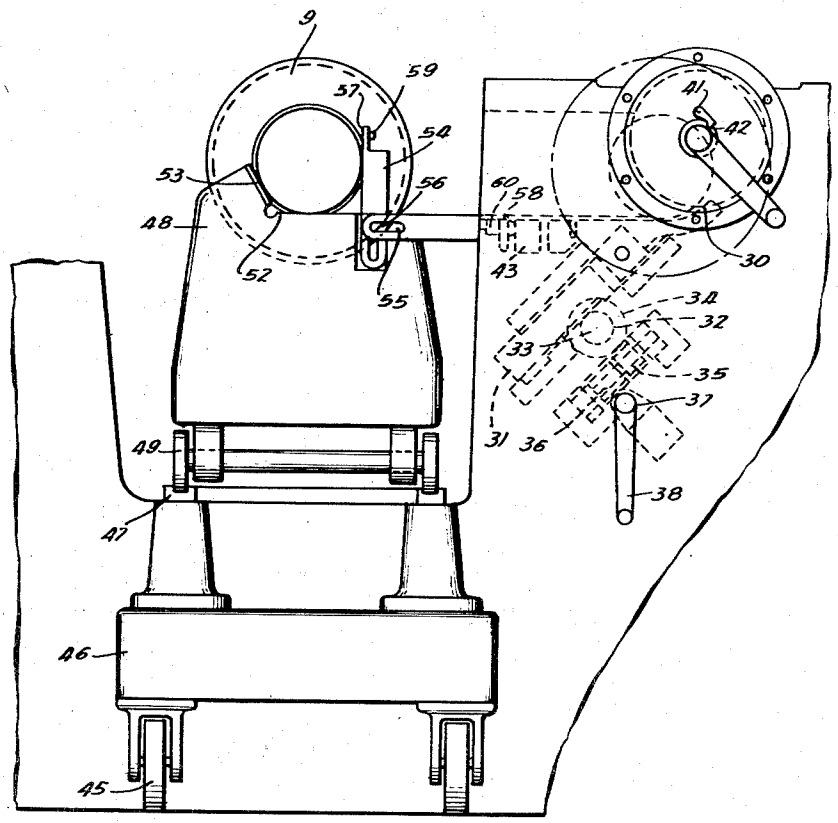
ATTORNEY

May 21, 1957 G. KALDSCHMIDT 2,792,781

CYLINDER CHANGE MECHANISM FOR ROTARY SHEET PRINTING PRESSES

Filed May 14, 1953 4 Sheets-Sheet 2

FIG. 2



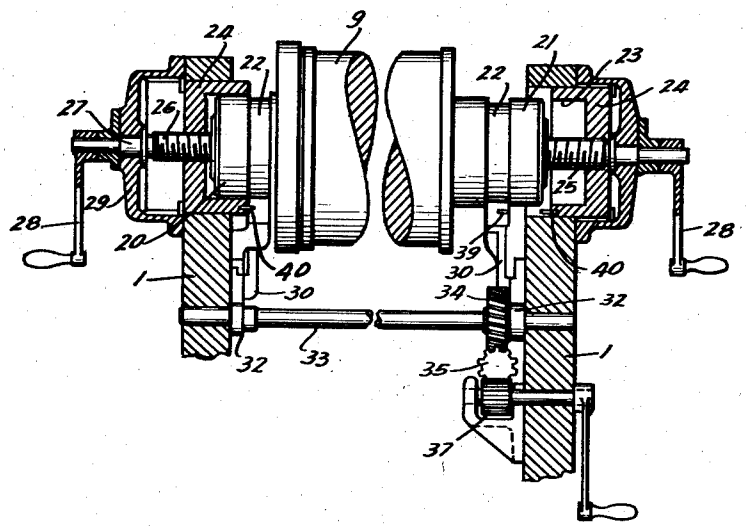
INVENTOR.
GEORG KALDSCHMIDT
BY
ATTORNEY

May 21, 1957 G. KALDSCHMIDT 2,792,781

CYLINDER CHANGE MECHANISM FOR ROTARY SHEET PRINTING PRESSES

Filed May 14, 1953 4 Sheets-Sheet 3

FIG. 3



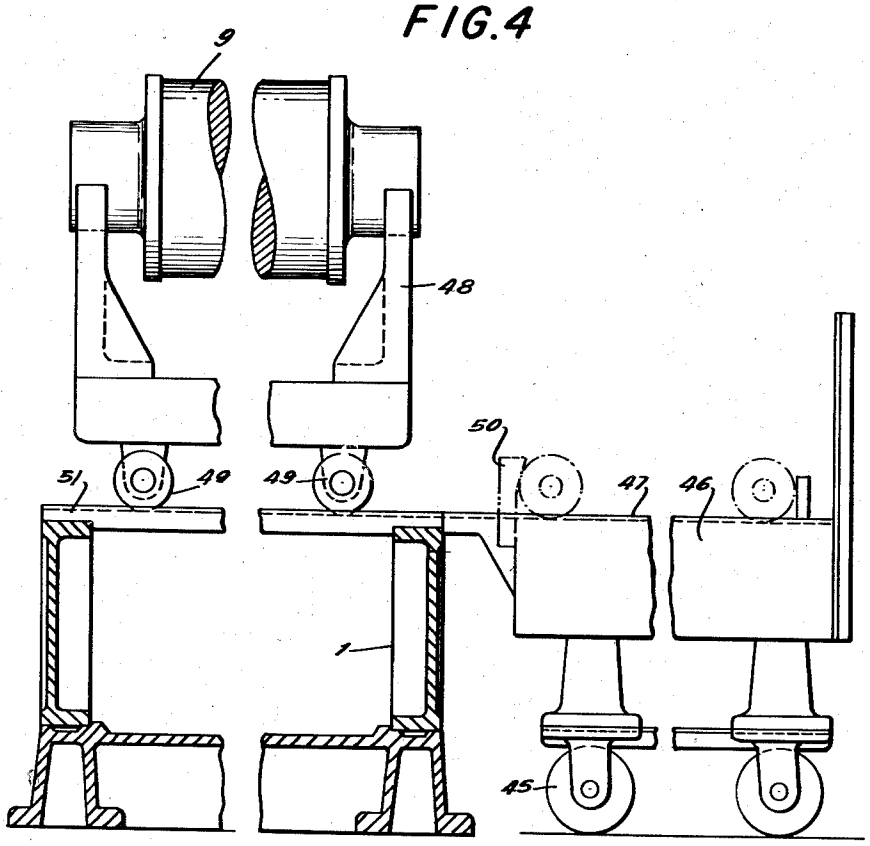
INVENTOR.
GEORG KALDSCHMIDT
BY
ATTORNEY

May 21, 1957 G. KALDSCHMIDT 2,792,781

CYLINDER CHANGE MECHANISM FOR ROTARY SHEET PRINTING PRESSES

Filed May 14, 1953 4 Sheets-Sheet 4

FIG. 4



INVENTOR.
GEORG KALDSCHMIDT
BY
ATTORNEY

United States Patent Office 2,792,781 Patented May 21, 1957

2,792,781

CYLINDER CHANGE MECHANISM FOR ROTARY SHEET PRINTING PRESSES

Georg Kaldschmidt, Dresden, Weisser Hirsch, Germany, assignor to VEB Druckmaschinenwerk Victoria, VVB Polygraph, Heidenau, Saxony, Germany

Application May 14, 1953, Serial No. 355,016

7 Claims. (Cl. 101—216)

This invention relates to a rotary sheet printing press for first side letterpress printing.

Sheet printing rotaries for plain printing, as offset or intaglio printing, are generally known, but in order to produce high-grade first side printing stop-cylinder, two-revolution or other presses, for instance of the rocker type, had to be resorted to hitherto.

The quality of a print depends upon making the printing elements properly ready for printing. The operations included in this preparatory work, which can be performed only by persons having been thoroughly trained for many years, take much time and involve a correspondingly long stoppage of the press.

Letterpress rotaries are used also for newspaper printing which, however, cannot be regarded as high-class work requiring careful making ready of the printing elements.

Means for making ready stereo plates outside the limits of the press are known also to shorten the stoppage times of newspaper rotaries, but the advantage gained by their use is slight. In a known device the printing plates together with their make-ready have to be dismounted from their cylinder prepared outside the press and then mounted again on the plate cylinder located in the press, which still makes it necessary to stop the press for a considerable time. This method is, moveover, not sufficient to meet the requirements of first side printing, so that it frequently happens that a prepared plate after its arrangement in the press has to be dismounted again for subsequent alterations.

It is the object of the invention to improve these conditions by employing a plurality of type-carrying means constructed as plate cylinders one of which is disposed in the press so as to be easily exchangeable while the other or others remain outside the limits thereof to be made ready for printing. In this way, the preparatory work required for high-grade printing can be performed outside the press limits, and the plate cylinder made ready for printing is then brought by suitable conveying means for exchange alongside the press in such manner that the exchange of the printed-out plate cylinder for the prepared one takes very little time and high quality of the print is insured.

According to the invention, the plate cylinder is held in axially displaceable bearing housings of the press frame permitting rapid exchange of cylinders. When a plate cylinder has done its work it is lowered by a lifting device in the press to the level of a carriage moved alongside the press, rolled on it and carried out of the frame. Then a new prepared plate cylinder is brought back by the carriage, rolled into the press and placed in printing position.

The carriage is of the dual type comprising a movable upper and lower part. Such carriages are used for instance in rotary copperplate printing presses for taking up a form cylinder that has to be exchanged.

When a plate cylinder has to be exchanged the lower carriage is first fastened to the press frame by suitable means, and the upper one entering the press on guide rails is fixed therein.

After the used plate cylinder has been dismounted the new one is rolled on forked rails provided in the press frame, which are raised by a rack and pinion drive, so that the plate cylinder can be placed in mounting position. Then bearing housing displaceably disposed in the side members of the frame and provided with conical recesses are moved by means of screws over conical barrel-type bearings arranged on the shaft ends of the plate cylinder to insure good seating.

Owing to this arrangement, the side members may be closed on the outside, and the inside need be recessed only to the extent required for introducing and removing a plate cylinder.

Pins of the bearing housings engage corresponding bores of the forked rails at axial displacement of the housings in operation to lock the lifting device and thereby prevent displacement of the rails during operation of the press.

One embodiment of the invention is illustrated, by way of example, in the accompanying drawings, wherein

Figure 1 is a diagrammatic view of the general arrangement of the rotary press;

Fig. 2, a side view of the lifting device for the plate cylinders with dual carriage;

Fig. 3, a front view, partly in section, of the lifting device; and

Fig. 4, a side view of an upper carriage pushed into the frame and of a lower carriage moved near the frame.

The press comprises the frame 1 accommodating the inking apparatus, the printing mechanism and the delivery member. The frame 1 rests on the foundation 5 on one side of which the weeding device 6 and, on the other, a delivery means with jogger-up 7 are arranged.

The printing mechanism 3 consists as usual of the impression cylinder 8 and plate cylinder 9 in contact with the rollers of the inking apparatus 2. The latter comprises a plurality of distributing cylinders 10 and coacting composition or rubber rollers 11 which receive fresh ink from the ink fountain 12 via the disconnectible vibrating roller 13. On one of the distributing rollers 10 acts a roller washing device 14 comprising an adjustable scraper and a readily exchangeable receiver for scraped-off ink.

Sheets coming from the feeding device 6 pass over the feed table 15 to gauges or guides 16 and are aligned by lateral displacement means 17. After alignment a sheet is engaged by gripping means 18 and transferred to the impression cylinder 8. In case of incorrect feeding the fingers 19 begin to act.

On the shaft ends of the plate cylinder 9 conical barrel-type bearings 20, 21 are provided each of which possesses a groove 22 in the center of its peripheral surface. When in operating position these conical bearings are embraced by corresponding conical guides 23 of the bearing housings 24 displaceably disposed in the walls of the frame 1. Threaded central bores 25 in the housing 24 are engaged by threaded pins 26 of the spindles 27 actuated by means of hand cranks 28. The spindles 27 are arranged in guide hoods 29 secured to the walls of frame 1 (Fig. 3).

On the left hand side of Fig. 3 the bearing 20 is arranged in the housing 24 while the bearing 21 shown on the other side is located outside the housing 24. When both housings 24 are in this position the cylinder can be taken out and exchanged for another one.

The grooves 22 of the conical bearings 20, 21 are engaged by the ends of forked rails 30 secured to obliquely positioned racks 31 which are in engagement with gears 32 keyed on shaft 33. This shaft supports also a worm wheel 34 meshing with a worm 35 and actuated by way of the helically toothed gears 36, 37 by a hand-operated crank 38.

The forked rails 30 possess bores 39 which by actuation of the cranks 28 are engaged by pins 40 of the housings 24, whereby the rails are secured and cannot be lowered during operation of the press.

On the guide hoods 29 sealing the seating of the plate cylinder oiltight toward the outside, pawls 41 are arranged (Fig. 2) which drop into a notch of the ratchet wheel 42 and prevent any loosening of the pushed-in housings 24 during operation. On both sides of the plate cylinder 9 rail members 43 secured to the walls of frame 1 form with the forked rails 30, when in lowest position, a horizontal surface on which a plate cylinder may be rolled in and out.

Exchange of a plate cylinder takes place with the aid of a dual carriage which serves for removing the plate cylinder to be exchanged and bringing back the new cylinder prepared for printing. The dual carriage comprises the lower carriage 46 with wheels 45 on the rails 47 of which the upper carriage 48 with wheels 49 is positioned.

The prepared plate cylinder is moved to the press, and the lower carriage 46 is coupled with the frame 1. After removal of the locking 50 on the rails 47 of the lower carriage the upper carriage is pushed in on the guide rails 51 positioned in frame 1, which are on a level with the rails 47 of the lower carriage 46 and sufficiently elevated to leave space enough below for the delivery means 4.

The plate cylinder 9 on the upper carriage 48 rests with its bearings 20, 21 on rails 52 and is held on one side by inclined surfaces 53 and on the other by folding rails 54 (Fig. 2) provided with longitudinal slots 55 engaged by guide pins 56 disposed on both sides of the upper carriage 48.

In order to roll a plate cylinder from the carriage into the frame the folding rails 54 are raised and turned 90° so as to act as bridge, their front end 57 engaging a recess 58 of the rail members 43. A pin 59 on the front end 57 engages during this operation a bore 60 of rail members 43 and thereby locks the folding rails of the upper carriage and the rail members to the frame. The plate cylinder can now be rolled from the upper carriage and onto the rails 30 which by actuation of the hand-operated crank 38 are then lifted until the cylinder is brought into central position as required for mounting.

I claim:

1. A rotary sheet printing press for first side letterpress printing, comprising, in combination a frame, a plurality of plate cylinders, means on the frame for exchangeably mounting one of said plate cylinders while the other plate cylinders are located outside the press limits to be made ready for printing, each of said cylinders having cylindrical bearing members projecting from the ends thereof and axially aligned, the mounting means of said frame comprising a pair of bushings having recesses sized to snugly and rotatably receive the respective cylinder bearing members when the plate cylinder is in a mounting position, the bushings being movably mounted on the frame with their recesses aligned and facing each other, means operable externally of said frame for moving said bushings toward and away from each other thereby decreasing and increasing the spacing between said bushing recesses, and means within the frame for bringing one of said plate cylinders to said mounting position in which its bearing members are aligned with the recesses of said bushings.

2. A rotary sheet printing press for first side letterpress printing, comprising, in combination, a frame, a plurality of plate cylinders, means on the frame for exchangeably mounting one of said plate cylinders while the other plate cylinders are located outside the press limits to be made ready for printing, each of said cylinders having enlarged cylindrical bearing members projecting from the ends thereof and axially aligned, the mounting means of said frame comprising a pair of bushings having recesses

sized to snugly and rotatably receive the respective cylinder bearing members when the plate cylinder is in a mounting position, the bushings being movably mounted on the frame with their recesses aligned and facing each other, means operable externally of said frame for moving said bushings toward and away from each other thereby decreasing and increasing the spacing between said bushing recesses, locating means for bringing one of said plate cylinders adjacent to said mounting position in which its bearing members are aligned with the recesses of said bushings, tracks on said frame for receiving the bearing members of the plate cylinder to be mounted, and means on the frame for moving said tracks in a direction in which they carry the plate cylinder to said bushings.

3. A printing press according to claim 2 in which the printing cylinder has annular grooves sized and located to receive said tracks, whereby said cylinder may be rolled along said tracks.

4. A printing press according to claim 2 in which the means for moving the tracks includes a rack carried by the tracks, a worm gear mounted on the frame and meshing with the rack, and crank means for turning the worm gear.

5. A printing press according to claim 2 in which the frame has a pair of guide rails, and a dual carriage including a lower carriage having rails thereon and an upper carriage movable on said rails and having means for mounting a plate cylinder, the dual carriage being movable toward and away from the press and being capable of being brought to the press to a position in which its lower carriage rails register with the frame guide rails whereby the upper carriage may be rolled on said registering rails interiorly of the carriage, the upper carriage having folding rails adapted to be brought to a turned-down position in which they register with the tracks of the frame, whereby the cylinder may be rolled onto said tracks.

6. A rotary sheet printing press for first side letterpress printing, comprising, in combination, a frame having rigid and immovable side walls, an ink roller and an impression cylinder rotatably mounted horizontally between said side walls in offset and vertical spaced relation to each other, a plurality of plate cylinders, means on the frame for exchangeably mounting one of the plate cylinders between the ink roller and impression cylinder while the other plate cylinders are located outside the press limits to be made ready for printing, each of said cylinders having enlarged cylindrical bearing members projecting from the ends thereof and axially aligned, the mounting means of said frame comprising a pair of bushings having recesses sized to snugly and rotatably receive the respective cylinder bearing members when the plate cylinder is in a mounting position between the ink roller and impression cylinder, the bushings being movably mounted on the frame with their recesses aligned and facing each other, means operable externally of said frame for moving said bushings toward and away from each other, thereby decreasing and increasing the spacing between said bushing recesses, means for bringing one of said plate cylinders adjacent to said mounted position in which its bearing members are aligned with the recesses of said bushings, tracks on said frame for receiving the bearing members of a plate cylinder from outside the press limits at a position below and to the rear of said mounting position, and drive means on the frame for moving said tracks forwardly and upwardly in a direction in which the plate cylinder is carried to its mounted position between said ink roller and said impression cylinder.

7. A printing press according to claim 6 in which the tracks have respective grooves therein, the bushings carrying respective pins which enter said grooves when the tracks have been moved forwardly and upwardly and the bushings are moved toward each other, whereby the

tracks are locked in their raised forward position supporting the cylinder mounted between said bushings.

References Cited in the file of this patent

UNITED STATES PATENTS

1,678,894	Wood	July 31, 1928
1,737,378	Littell	Nov. 26, 1929
1,782,608	Fulk	Nov. 25, 1930
2,129,698	Luehrs	Sept. 13, 1938
2,158,237	Huck	May 16, 1939
2,460,504	Huebner	Feb. 1, 1949
2,585,325	Imshang	Feb. 12, 1952
2,607,291	Jacobson	Aug. 19, 1952