Oct. 27, 1936. H. M. BARBER 2,058,760

ROTARY PRINTING PRESS

Filed Feb. 16, 1935

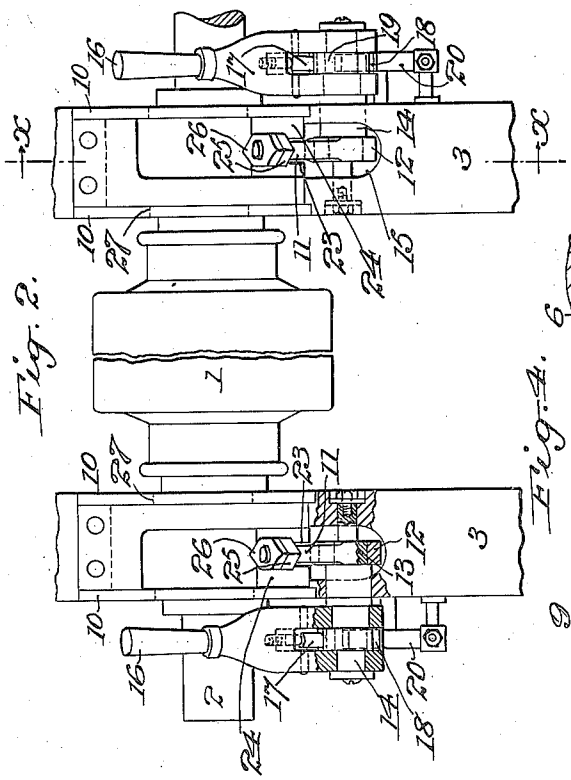


Fig. 2.

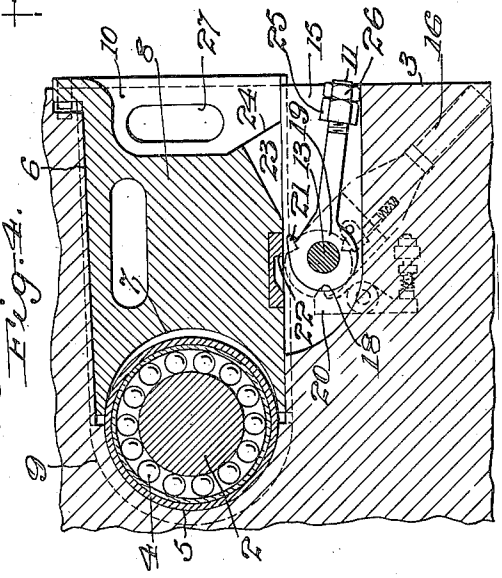


Fig. 4.

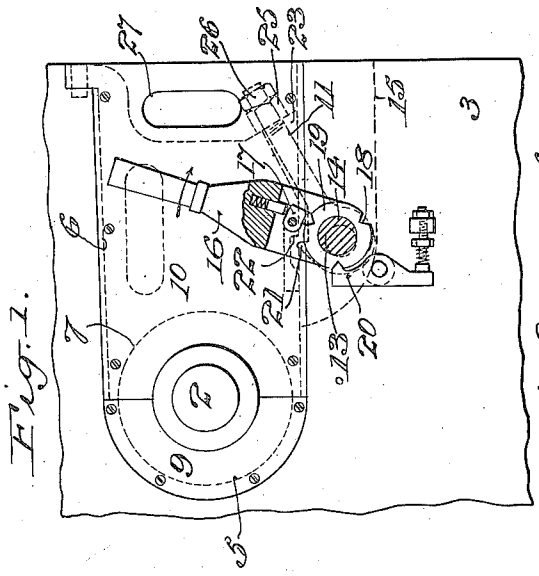


Fig. 1.

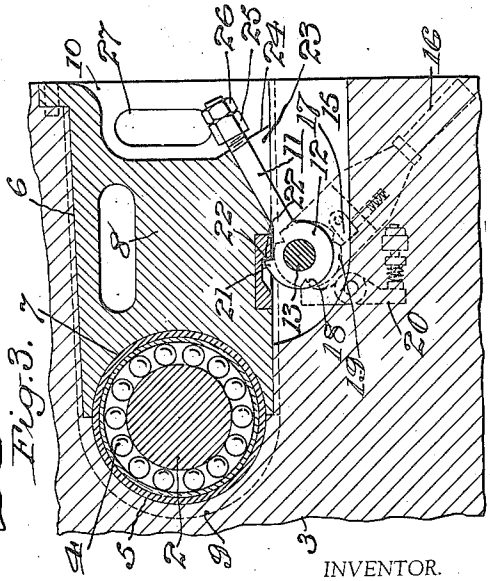


Fig. 3.

INVENTOR.

Howard M. Barber

BY

Brown & Seward

ATTORNEYS

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ROTARY PRINTING PRESS

Howard M. Barber, Pawcatuck, Conn., assignor to C. B. Cottrell & Sons Company, Westerly, R. I., a corporation of Delaware

Application February 16, 1935, Serial No. 6,805

5 Claims. (Cl. 308—58)

In rotary intaglio printing presses the printing surface of the form cylinder has a very limited life and it is therefore necessary to remove and replace the form cylinder frequently. This operation requires a considerable amount of time. The object of my invention is to provide novel and effective means for permitting the ready removal and replacement of the form cylinders.

My invention generally comprises removable locking members for the form cylinder shaft and manually controlled means for first releasing the locking members and thereafter positively starting them on their removal movement.

A practical embodiment of my invention is represented in the accompanying drawing, in which

Fig. 1 represents a detail side view, partly in section, of so much of a rotary intaglio printing press as will give a clear understanding of my improved cylinder lock; the parts being shown in the positions they assume when the form cylinder shaft is locked in its operative position;

Fig. 2 represents a detail end view, partly in section, with the parts in the positions shown in Fig. 1;

Fig. 3 represents a detail vertical section taken in the plane of the line x—x of Fig. 2, the parts being shown in the positions they assume when the locking members for the form cylinder shaft have been unlocked;

Fig. 4 represents a similar section, the parts being shown in the positions they assume when the locking members for the form cylinder shaft have been started on their removal movement.

The removable form cylinder 1 of the printing press has its shaft 2 rotatably mounted in the press side frames 3. Roller bearing units 4 are provided for the form cylinder shaft 2 beyond the ends of the form cylinder, which roller bearing units may be removed from the shaft by an endwise movement when the shaft has been removed from the press side frames 3.

Each roller bearing unit is removably housed, when the cylinder is in its operative position, in the semi-cylindrical end 5 of a recess 6 in the side frame and partly in the semi-cylindrical recess 7 in the removable locking member 8. Side plates 9 are secured to the opposite faces of the side frame 3 in alinement with the side plates 10 of the removable locking member 8. These side plates 9 and 10 serve to prevent endwise movement of the roller bearing unit 4 when the form cylinder is in its operative position. The device for securing the removable locking member 8 in place to retain the form cylinder shaft in its operative position comprises a swinging bolt 11 having its head 12 pivotally mounted on the eccentric portion 13 of a cross shaft 14, said eccentric portion 13 being located within a recess 15 opening upwardly into the locking member receiving recess 6. This cross shaft 14 is suitably mounted in the side frame 3 upon opposite sides of the recess 15 and one end of this cross shaft projects outwardly beyond the face of the said side frame.

The manually controlled means which serves the double purpose of securing and releasing the locking member and also of starting the locking member on its removal movement may be constructed, arranged and operated as follows:

A hand lever 16 is rotatably mounted on the cross shaft 14, which hand lever is provided with a spring pressed pawl 17 arranged to be brought into engagement with any one of a circumferential series of notches 18 (three in the present instance) in a collar 19 fast on the cross shaft 14. Another spring pressed pawl 20 mounted on the outer face of the side frame 3 is arranged to automatically snap into engagement with one of the notches 18 in the collar 19, to yieldingly hold the hand lever 16 in any of its adjusted positions.

The head 12 of the swinging bolt 11 is provided with a lug 21 which is arranged to be brought into engagement with an abutment 22 formed by a recess in the removable locking member 8.

The bolt 11 is adapted to be swung upwardly into a recess 23, the outer end of which forms a seat 24 against which a nut 25 on the bolt 11 is screwed, to lock the removable locking member 8 in its operative position. A lock nut 26 may also be provided on the bolt 11 for locking the nut 25 in its adjusted position.

To facilitate the entire removal of the locking member 8 from its recess 6, the locking member may be provided with hand holes 27 in its side plates 10.

In operation: Assuming the form cylinder to be locked in the frame in its operative position and it be desired to remove the cylinder, the hand lever 16, located in the position shown in Fig. 1, is swung one-third of a revolution in the direction of the arrow to the position shown in dotted lines in Fig. 3. This movement of the hand lever 16, because of its pawl and ratchet connection with the disc 19, will rotate the shaft 14 to bring its eccentric portion 13, on which the head of the bolt 11 is pivoted a sufficient distance to move

the bolt 11 endwise and thereby separate the nut 25 from its locking position against the seat 24 of the removable locking member. The hand lever is then swung back to its original position, shown in Fig. 1, where its pawl will engage a succeeding notch 18 in the collar 19. The hand lever is again swung forwardly one-third of a revolution to the position shown in dotted lines in Fig. 4. This second forward movement of the hand lever will cause the lug 21 to engage the abutment 22 on the removable locking member 8 and start the locking member on its withdrawal movement until the lug 21 passes out of engagement with the abutment 22, allowing the bolt 11 to drop into its recess 15 as shown in Fig. 4. Each locking member 8 may then be entirely removed from its recess 6, thus permitting the removal of the cylinder, its shaft and the roller bearing carried thereby.

After the cylinder has been replaced in its side frames it may be locked therein as follows:

Each locking member 8 is inserted into its recess 6 to the extent shown in Fig. 3. The hand lever 16 is swung back to its original position shown in Fig. 1 and the bolt 11 is swung upwardly by hand into the position shown in Fig. 3. The hand lever 16 is then swung forwardly the third time, one-third of a revolution to the position shown in Fig. 3. This movement will complete the revolution of the eccentric portion 13 of the cross shaft, bringing it back to its original position shown in Fig. 1, thus causing the nut 25 to be brought into its locking engagement with the seat 24 of the locking member 8. The hand lever 16 may then be swung back to its original position shown in Fig. 1, ready for the next cycle of operations.

From the above description it will be seen that the three forward movements of the hand lever, each one-third of a revolution, will move the eccentric portion 13 of the rotatable cross shaft 14 a complete revolution from and to its original position.

It is evident that various changes may be resorted to in the construction, form and arrangement of the several parts without departing from the spirit and scope of my invention, and hence I do not intend to be limited to the particular embodiment herein shown and described, but

What I claim is:

1. In a rotary printing press, a frame, a form cylinder, its shaft, removable shaft locking members slidable in a right line in the frame, separate locking and starting devices for said members, and manually controlled means operable to first cause the locking devices to release the members and to thereafter cause the starting devices to move the said members a short distance only on their removal movements.

2. In a rotary printing press, a form cylinder, its shaft, a removable locking member for each end of the shaft, a cross shaft having an eccentric portion, a swinging bolt having its head pivotally mounted on said eccentric portion, said bolt having both a nut and a lug for engaging the locking member, and a hand lever having a pawl and ratchet connection with the cross shaft for first releasing the bolt and thereafter positively starting the locking member on its removal movement.

3. In a rotary printing press, a frame, a form cylinder, its shaft rotatably mounted in the frame, removable shaft locking members slidable in a right line in the frame, locking devices for the shaft locking members, and manually controlled means operable to first release the locking devices and thereafter positively slide the locking members a short distance only on their removal movements.

4. In a rotary printing press, a form cylinder, its shaft, a removable locking member for each end of the shaft, a cross shaft having an eccentric portion, a swinging bolt having its head pivotally mounted on the eccentric portion, said bolt having both a nut and a lug for engaging the locking member, and a hand lever pivotally mounted on the cross shaft and having a pawl and ratchet connection therefor for first releasing the bolt and thereafter positively starting the locking member on its removal movement.

5. In a rotary printing press, a frame, a form cylinder, its shaft rotatably mounted in the frame, removable shaft locking members slidably mounted in the frame, swinging bolts, each having a nut and a lug for engaging its locking member, and manually controlled means for swinging the bolt to first release the nut from its engagement with the locking member and to thereafter cause the lug to start the locking member a short distance only on its removal movement.

HOWARD M. BARBER.