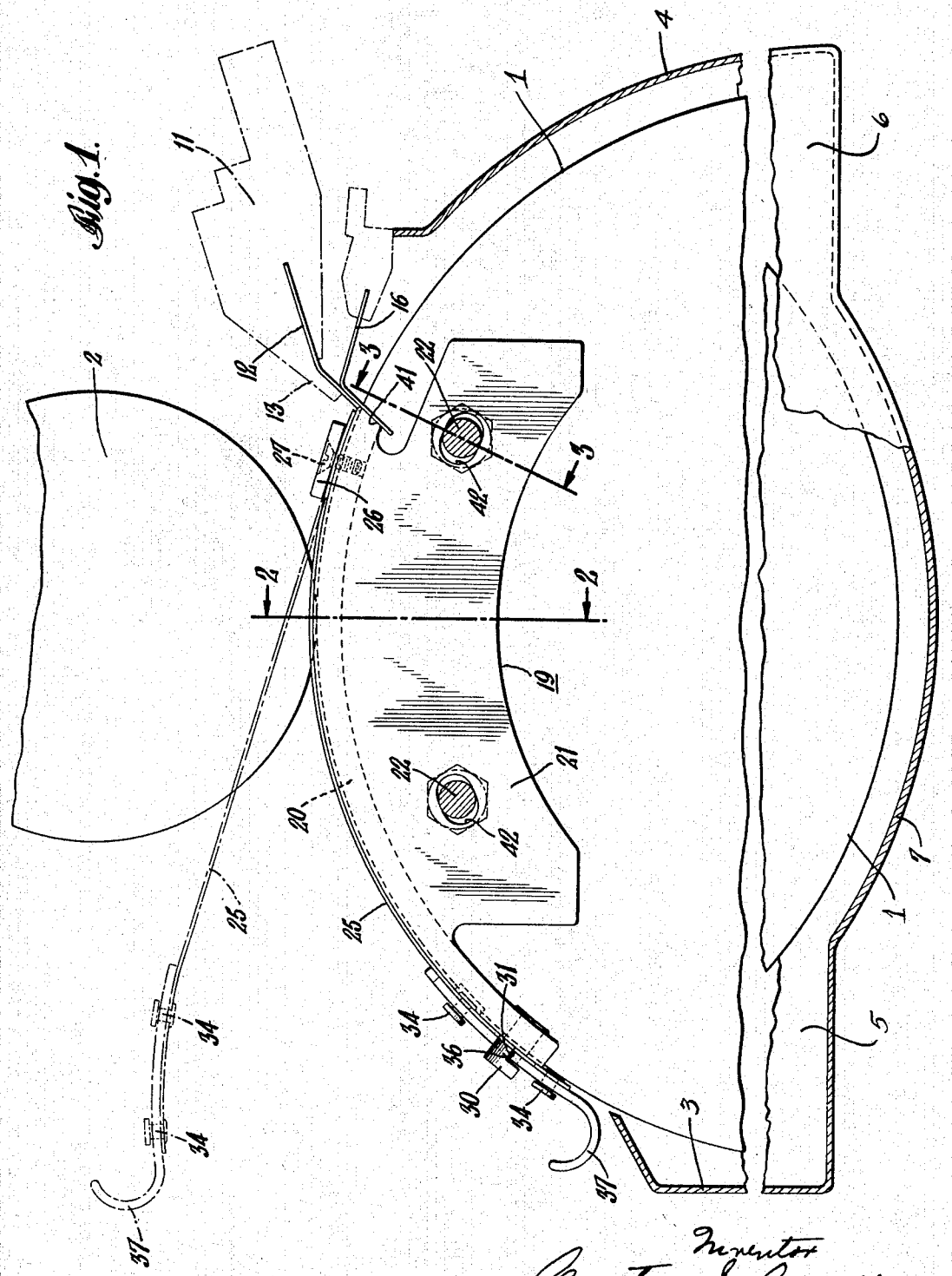
Dec. 10, 1940. C. S. CRAFTS 2,224,218

INK FOUNTAIN

Original Filed Dec. 21, 1938 2 Sheets-Sheet 1

Fig. 1.



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Fig. 2.

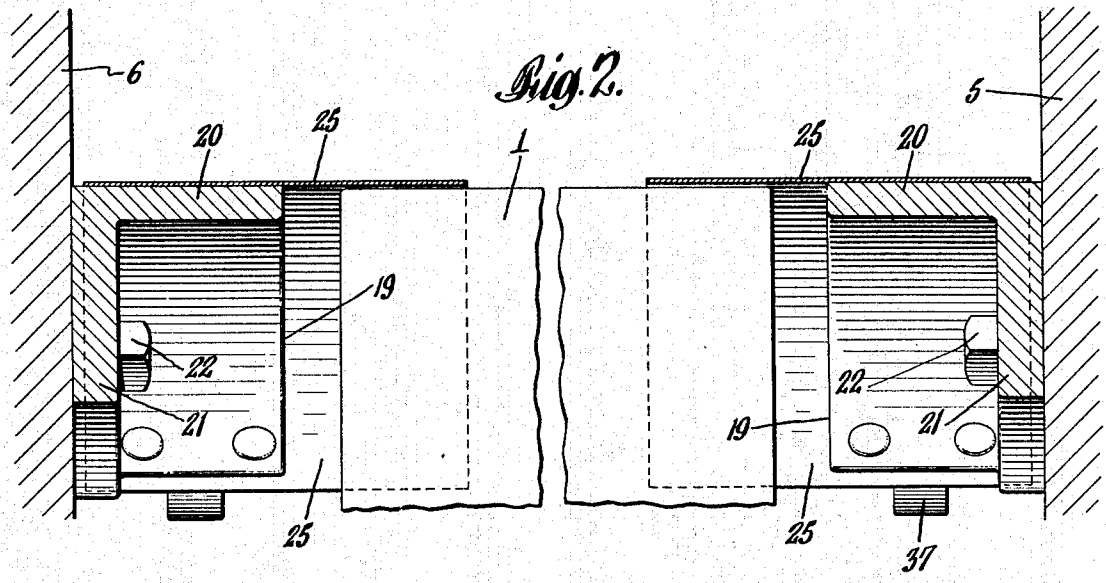
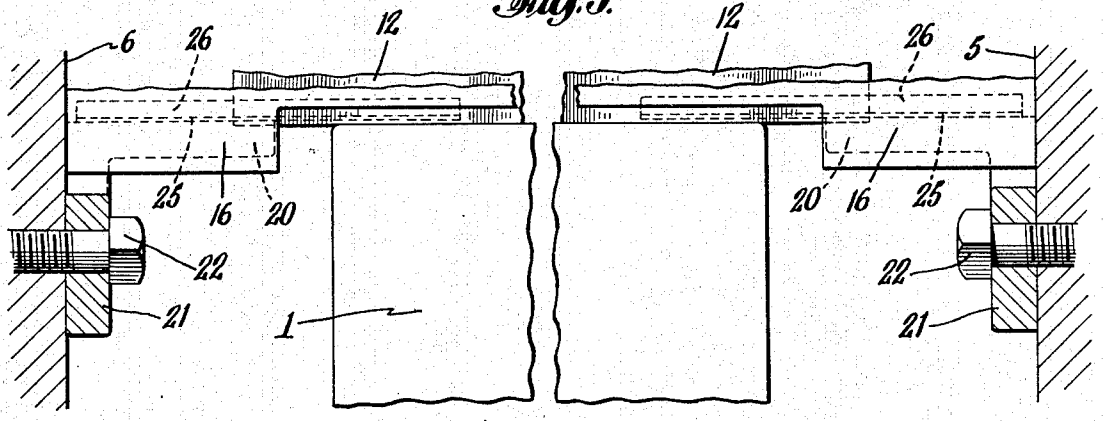


Fig. 3.



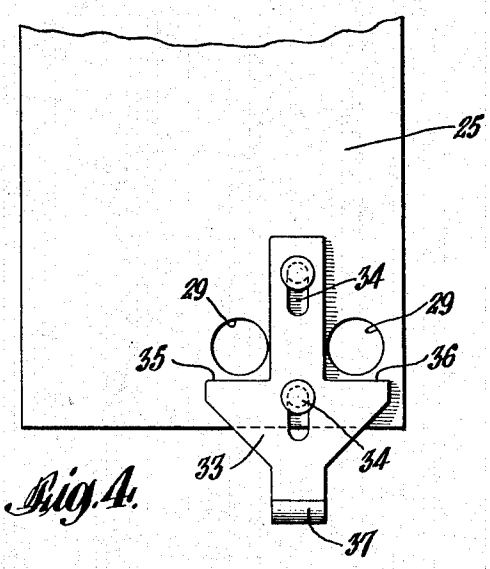


Fig. 4.

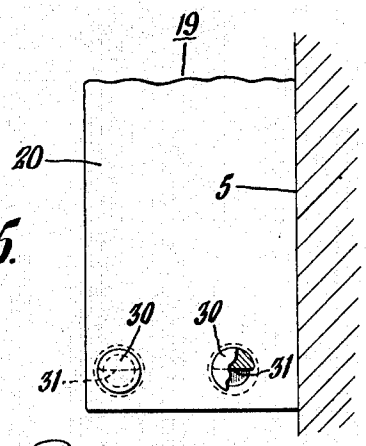


Fig. 5.

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UNITED STATES PATENT OFFICE

2,224,218

INK FOUNTAIN

Curtis S. Crafts, Oak Park, Ill., assignor to The Goss Printing Press Company, Chicago, Ill., a corporation of Illinois

Original application December 21, 1938, Serial No. 246,947. Divided and this application February 23, 1940, Serial No. 320,317. In Great Britain October 11, 1939

8 Claims. (Cl. 101—157)

The invention relates to new and useful improvements in rotary printing presses, and more especially to such improvements in ink fountain sealing devices for rotogravure presses using quick drying inks.

This application is a division of my copending application Serial No. 246,947, filed December 21, 1938.

Objects and advantages of the invention will be set forth in part hereinafter and in part will be obvious herefrom, or may be learned by practice with the invention, the same being realized and attained by means of the instrumentalities and combinations pointed out in the appended claims.

The invention consists in the novel parts, constructions, arrangements, combinations and improvements herein shown and described.

The accompanying drawings, referred to herein and constituting a part hereof, illustrate one embodiment of the invention, and together with the description, serve to explain the principles of the invention.

Of the drawings:

Fig. 1 is a fragmentary end elevation of a rotary intaglio printing couple and showing an embodiment of my invention;

Fig. 2 is a fragmentary transverse section on line 2—2 of Fig. 1;

Fig. 3 is a fragmentary transverse section taken on line 3—3 of Fig. 1;

Fig. 4 is a fragmentary detail plan of the hand-operated fastening device for the sealing plate shown at the left in Fig. 1; and

Fig. 5 is a fragmentary detailed plan of parts cooperating with the fastening device of Fig. 4.

Objects of the invention are to provide novel and useful closure or sealing devices as part of closed or sealed ink fountains, and to provide such devices well and specially adapted to close or seal the top part of the fountain closure at either end of the design cylinder and overlapping the top curved portion of the cylinder, and about and in cooperation with the vibrating doctor blade; to provide such closure or sealing devices of strong and simple construction, which are quickly and easily placed and fastened in closing position and removed or released therefrom, and are provided with simple, adequate and easily operated fastening means; to provide such devices which when unfastened will automatically move aside, and of themselves remain out of the way, to permit free and unobstructed removal and reinsertion of a design cylinder; to provide maximum practical sealing about the vibrating doctor blade, and to obviate friction between the vibrating doctor and the closure or sealing devices, and also to avoid any displacement or disturbance of the doctor blade, or of its movement such as transverse flexure.

With these objects in view, together with other objects which are later herein set forth, or will be learned from practice with the invention, closure or sealing plates are provided of relatively stiff, resilient metal, which are flexed over curved supports mounted on the fountain side walls at either end of the design cylinder, the resilient plates being fastened in this curved or flexed position overlapping the ends of the top part of the cylinder, and cooperating with other parts of the fountain to constitute a substantially sealed fountain. When one end of the plates is released, they will spring upwardly away from the cylinder and fountain walls, and remain there, thus providing unobstructed space for removal and reinsertion of the design cylinder without danger of marring the design bearing surface; and the fastening and unfastening of these ends of the plates is effected by one simple movement. The curved supports for the sealing plates at one end abut on the backing blade for the doctor blade and hold the backing blade out of frictional engagement with the doctor blade in the spaces at the ends of the cylinder, and also prevent lateral displacement or flexure of the doctor blade, while maintaining the closure or seal. It will be understood that the foregoing general description, and the following detailed description as well, are exemplary and explanatory but not restrictive of the invention.

Referring now in detail to the embodiment of the invention illustrated by way of example in the accompanying drawings, the invention is shown applied to a rotogravure press having inking means adapted to use quick-drying ink and equipped with a closed or sealed fountain. As embodied, a design cylinder 1 and impression cylinder 2 constitute a usual rotogravure printing couple. The design cylinder is very largely enclosed within a fountain structure having side walls 3 and 4, about and spaced apart from the design cylinder, having end walls 5 and 6 spaced apart from the ends of the cylinder 1 and a bottom 7. The ink supplying means is not shown and may be of any suitable form. This structure is shown fragmentarily in Fig. 1 with the central part omitted. Near the top edge of the side wall 4 is mounted a doctor blade mechanism 11, which carries the flexible doctor blade 12, the blade 12 being flexed in the

usual manner by a clamping bar 13. The doctor blade is longitudinally reciprocable on its supporting mechanism in a usual manner and the support is constructed so as to join the wall 4 to form part of the closure about the design cylinder 1. Cooperating with the doctor blade 12 is a stationary backing plate 16, which rests against and supports the back face of the doctor blade in a known manner, the doctor blade reciprocating on the backing blade. The fountain side wall 3 has its top edge brought into close contact with the design cylinder on the side beyond the impression locus, and forms a substantial closure above the ink supplying means located within the fountain. It is desirable also to provide closure or sealing means for the top of the fountain at either end of the design cylinder and such closure or sealing means are provided by the present invention.

As illustratively embodied, resilient closure plates 25 at either end of the cylinder fill the space between the fountain end walls and the cylinder and overlap and fit closely the upper part of the cylinder ends. In this preferred form, a support for the closure plates is provided at either end of the design cylinder 1, these supports 19 having parti-cylindrical supporting members 20, and these parts 20 have their upper surfaces of the same curvature and in alinement with the top part of the cylinder, and are adapted to support the flex sealing plates on the same radius curve as the design cylinder 1. These cylindrical supporting members are integral with flat arcuate side members 21, the flat outer sides of which abut on the inside of the respective end walls 5 and 6 of the fountain and are fastened thereto by screw bolts 22. These plate supports 20, 21 extend approximately from the doctor blade to the opposite side wall 3 of the fountain. The closure or sealing plates 25 are of strongly resilient metal, such as steel, and preferably are sufficiently wide to extend from the fountain side wall to overlap the adjacent end of the design cylinder to a desired amount, and are of a length sufficient to extend from near the doctor blade to the top edge of the side wall 3 of the fountain. At their ends toward the doctor blade, the closure plates 25 are fastened to the support 20 by suitable means such as clamping blocks 26 and screws 27 passing through the clamping block and the plate 25 and screw threaded into the supporting member 20.

At their opposite ends, that is, the ends adjacent the wall 3, the plates 25 are fastened to their supports 20 by devices which are quickly and easily operated to either fasten or release the plates. As embodied (Figs. 1 and 4), openings 29 are formed in plate 25, and these openings are adapted to pass over detent pins 30 which are fastened into and project upwardly from the supports 20. The pins 30 have an undercut side notch 31, and cooperating therewith is a T-shaped slide 33, slidably mounted on top of the plate 25 by pin and slot connections 34. The slide 33 has two arms or locking edges 35 and 36, adapted to pass into and out of engagement with the undercut notches 31, and the slide is preferably provided with a manual pull 37. Thus the plate 25 which is fastened at 27 may be bent over and about its support 20 until the apertures 29 pass over the pins 30 while the detent plate 33 is being drawn back to the position shown in Fig. 4, and thereafter the detent plate 33 is pushed forwardly until the locking edges 35 and 36 engage in the notches 31, as shown in Fig. 1, and the plates 25 are held in curved closing or sealing position on the supports 20 with their inner portions conforming to and bearing on the surface of the cylinder 1. The sealing plates 25 may be readily released by sliding the detent plate 33 and then, due to the resilient nature of the plates, they will spring upwardly from the full line to the broken line position in Fig. 1, and remain in the elevated position until again drawn down onto the supports 20. When in the elevated position they are automatically out of the way, and the design cylinder may be removed from the fountain and the same or another cylinder inserted without danger of injuring the design surface by contact with the closure plates.

Means are provided for avoiding friction and wear between the reciprocating doctor blade 12 and the backing plate 16, and for preventing lateral displacement or bending of the doctor blade from its path near the ends of its stroke. As here embodied, the backing blade 16 is made wider and extends inwardly, at either end of the design cylinder, however, leaving suitable clearance for design cylinders of different lengths (Fig. 3). These widened end portions of the backing blade 16 contribute to the sealing action, and to prevent springing thereof, these ends are engaged on the outer side thereof by the ends 41 of the supports 20, which ends are beveled to fit closely against the surface of the blade 16. The supports are angularly movable to vary and regulate the pressure on the backing blade 16, and for this purpose the bolts 22 pass through elongated slots 42 in the flat arcuate flanges 21, thereby permitting angular movement of the supports and nice regulation of the pressure or flexing action on the backing blade 16, and positioning these parts of the blade 16 relatively to the reciprocating doctor blade 12, so as to prevent undue friction between them, and also so as to prevent flexure or displacement of the doctor blade by the backing blade 16. The ends of the plates 25 abut closely on the broadened ends of the blade 16 and make a tight closure at either end of the path of the vibrating doctor blade.

The invention in its broader aspects is not limited to the specific mechanisms shown and described but departures may be made therefrom within the scope of the accompanying claims without departing from the principles of the invention and without sacrificing its chief advantages.

What I claim is:

1. In a rotary printing press, in combination a printing couple having an impression cylinder and a design cylinder, an ink fountain, a reciprocating doctor blade cooperating with the design cylinder, a backing blade engaging and supporting the doctor blade, and means located at either end of the design cylinder and engaging the backing blade and pressing it back to prevent undue friction or displacement of the reciprocating doctor blade.

2. In a rotary intaglio press having a design cylinder and inking means, a resilient flexed reciprocable doctor blade, a resilient backing blade engaging the doctor blade and means at either end of the design cylinder engaging and flexing the backing blade from the path of the doctor blade.

3. In a rotary intaglio press having a design cylinder and inking means, a doctor blade, a reciprocable carriage for the doctor blade, a member mounted on the carriage and engaging and flexing the doctor blade toward the design

cylinder, a stationary backing blade engaging the doctor blade on the opposite side from said flexing member, and devices engaging said backing blade at either side of the design cylinder to hold it out of the path of reciprocation of the doctor blade.

4. In a rotary intaglio press having a design cylinder and inking means, a doctor blade, a reciprocable carriage for the doctor blade, a member mounted on the carriage and engaging and flexing the doctor blade toward the design cylinder, a stationary resilient backing blade engaging the doctor blade on the opposite side from said flexing member, and devices engaging said backing blade at either side of the design cylinder to flex and hold it out of the path of reciprocation of the doctor blade.

5. In an intaglio rotary printing press in combination a printing couple having an impression cylinder and a design cylinder, an ink fountain having walls about the design cylinder, a reciprocable doctor blade cooperating with the design cylinder, a backing blade engaging the rear face of the doctor blade and extending beyond it at either side, closure means at either end of the design cylinder including supports carried on the fountain structure and plates carried on said supports and filling the space between the cylinder ends and the fountain end walls, said supports abutting on the backing blade at either end of the doctor blade.

6. In an intaglio rotary printing press in combination a printing couple having an impression cylinder and a design cylinder, an ink fountain having walls about the design cylinder, a reciprocable doctor blade cooperating with the design cylinder, a backing blade engaging the rear face of the doctor blade and extending beyond it at either side, closure means at either end of the design cylinder including supports carried on the fountain structure and plates carried on said supports and filling the space between the cylinder ends and the fountain end walls, said supports abutting on the backing blade at either end of the doctor blade, and means for variably positioning said supports to vary the position of the ends of the backing blade relatively to the doctor blade.

7. In an intaglio rotary printing press in combination a design cylinder, a flexed reciprocable doctor blade cooperating with the cylinder, a stationary backing blade pressing against the back of the doctor blade and extending beyond the ends of the doctor blade, and means engaging the ends of the backing blade at either end of the doctor blade to prevent undue friction or displacement of the doctor blade.

8. In an intaglio rotary printing press in combination a design cylinder, a flexed reciprocable doctor blade cooperating wtih the cylinder, a stationary backing blade pressing against the back of the doctor blade and extending beyond the ends of the doctor blade, and means engaging and variably positionable relatively to the ends of the backing blade at either end of the doctor blade to prevent undue friction between the doctor blade and backing blade or displacement of the doctor blade.

CURTIS S. CRAFTS.