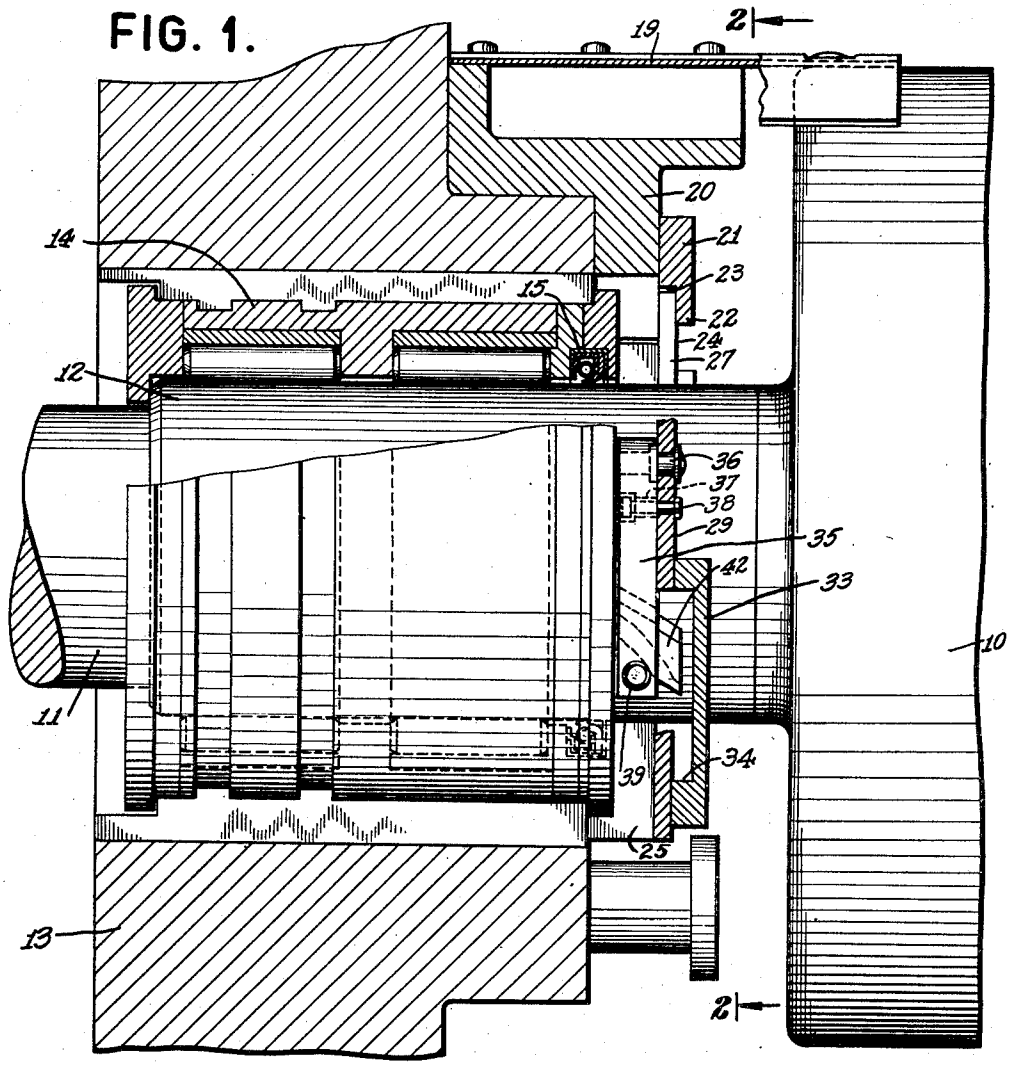
May 30, 1944. A. BEHRINGER 2,350,089

BEARING SHIELD

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FIG. 1.



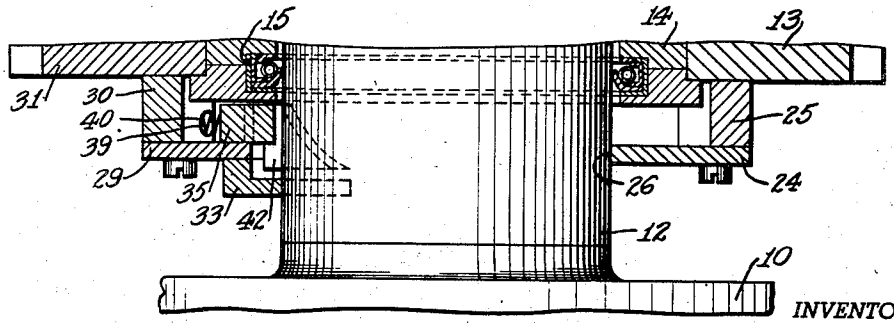


FIG. 3.

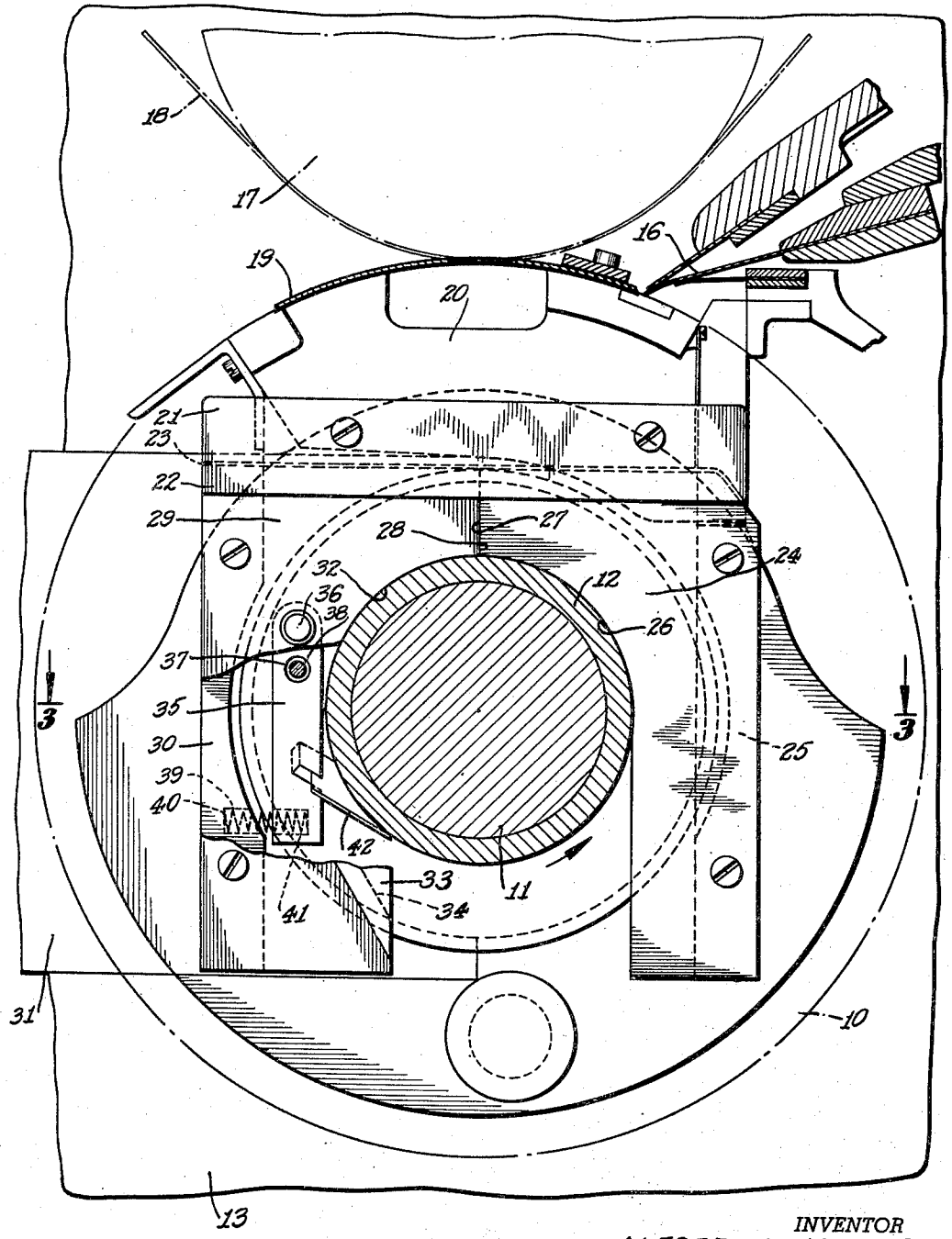
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FIG. 2.



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UNITED STATES PATENT OFFICE

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BEARING SHIELD

Alfred Behringer, Wanaque, N. J., assignor to Alco-Gravure Division of Publication Corporation, New York, N. Y., a corporation of New York

Application May 22, 1943, Serial No. 488,014

8 Claims. (Cl. 101—157)

The present invention relates to sealing mechanisms for bearings and embodies, more specifically, an improved form of bearing seal by means of which fluid may be prevented effectively from advancing axially along a shaft and entering the shaft bearings.

In the operation of printing presses, it frequently happens that an excess quantity of ink is applied to the rotating printing cylinder and, in being wiped or scraped from the cylinder, falls upon the cylinder shaft and enters the shaft bearings. This ink is highly corrosive and rapidly destroys the bearings. Bearing seals have heretofore been provided, but they have been found to be ineffective to seal the shaft against such great quantities of ink, and an object of the present invention is to provide a seal by means of which the ink is effectively removed from the rotating shaft prior to entry into the shaft bearing.

Other and further objects of the invention will appear as it is described in connection with the accomyanying drawings, wherein:

Figure 1 is a view in vertical section, partly broken away to show details of the structure with greater clarity, and showing a sealing mechanism constructed in accordance with the present invention;

Figure 2 is a view in transverse section, taken on the plane indicated by the line 2—2 in Figure 1 and looking in the direction of the arrows; and

Figure 3 is a view in horizontal section, taken on the line 3—3 of Figure 2 and looking in the direction of the arrows.

Referring to the drawings, a printing cylinder is indicated at 10 having a shaft 11 formed with a sleeve 12. The cylinder is supported in a side frame of the press as shown at 13, the frame being provided with bearing mechanism indicated generally at 14. A conventional bearing seal is utilized at 15, and the details of the bearing and seal above mentioned need not be described further, in view of the fact that these elements are conventional.

In the form of printing to which the present invention relates, in particular, rotary intaglio printing, the printing cylinder 10 is provided with an excess quantity of ink that is wiped from the cylinder doctor blade 16 shown in Figure 2, the doctor blade being provided with other deflecting and sealing elements which need not be described in further detail herein, in view of the fact that they form no part of the present invention. For the purpose of illustration, also, Figure 2 shows an impression cylinder 17 and a web 18 which receives a printed impression from the printing cylinder 10. In order to seal in the cylinder in the ink fountain, end sealing plates 19 are provided, also in accordance with conventional practice. The end seal 19 is mounted upon a mounting plate 20 (Figure 1) and, in accordance with the present invention, a cover strip 21 is secured to the plate 20 and provided with a downwardly extending flange 22 forming a rabbet 23 between the flange 22 and the bearing mechanism above mentioned.

Also in accordance with the present invention, a sealing plate section or shield 24 is secured, by means of a spacer block 25, to the adjacent side of the press frame and is formed with a curved interior edge 26 that is adapted to lie against or in very close proximity to the printing cylinder journal or sleeve 12. The shield 24 is formed with a meeting edge 27 that cooperates with a similar edge 28 of a removable shield or plate section 29 mounted upon a spacer block 30 that is secured to a removable portion 31 of the press frame. The upper edges of the shields 24 and 29 lie within the rabbet 23 to seal the bearing against the passage of ink beneath the cover strip 21. The removable shield is formed with a curved interior edge 32 that co-cooperates with the cylindrical surface of the journal or sleeve 12 in a manner similar to the surface 26.

The removable shield 29 is formed with a recessed portion 33 having a sloping bottom surface 34 down which the ink may run to be returned to the ink fountain.

On the side of the shield 29 adjacent the bearing, a lever 35 is provided, the lever being pivoted on a pivot pin 36. The lever is formed with an over-sized aperture 37 within which a fixed pin 38 is recessed, the pin 38 being secured to the shield 29 to provide a limited pivotal movement of the lever with respect to the shield. A spring 39 is seated in a recess 40 formed in the spacer block 30 and urges the lever outwardly toward the cylinder shaft by reason of the fact that its other end is seated in a recess 41 formed in the lever 35.

The lever 35 is provided with a fiber scraper blade 42 which is positioned so that it lies in a plane that is not parallel to the axis of the cylinder shaft. As illustrated in Figures 1 and 2, the slope of the fiber scraper is downwardly and inwardly toward the printing cylinder. As a result, rotation of the printing cylinder in the direction of the arrow shown in Figure 2, when accompanied by ink moving outwardly along the cylinder shaft, will cause the ink to be wiped

from the surface of the shaft and deflected by the scraper blade into the pocket or recessed portion 33 to fall back into the fountain. This will prevent any ink from reaching the seal 16.

While the invention has been described with reference to the specific structure shown in the drawings, it is not to be limited save as defined in the appended claims.

I claim:

1. A bearing seal for printing cylinders comprising a printing cylinder having a shaft, a bearing for the shaft, a scraper blade, means to mount the blade at an angle to the axis of the shaft and at an angle greater than 90° with respect to a plane transverse to the axis of the shaft on the side toward the cylinder, and means to urge the scraper blade against the cylinder shaft.

2. A bearing seal for printing cylinders comprising a printing cylinder having a shaft, a bearing for the shaft, a shield formed with a curved surface adapted to lie closely adjacent the shaft, a lever hinged on the shield on the side opposite the cylinder, a scraper blade on the lever, and means to urge the lever toward the shaft to cause the blade to engage the surface of the shaft.

3. A bearing seal for printing cylinders comprising a printing cylinder having a shaft, a bearing for the shaft, a two-piece shield formed with a curved surface adapted to lie closely adjacent the shaft, a lever hinged on the shield on the side opposite the cylinder, a scraper blade on the lever, and means to urge the lever toward the shaft to cause the blade to engage the surface of the shaft.

4. A bearing seal for printing cylinders comprising a printing cylinder having a shaft, a bearing for the shaft, a two-piece shield, each of said pieces being formed with a curved surface adapted to lie closely adjacent the shaft, means to secure one piece rigidly in position with its curved surface closely adjacent the shaft, means to mount the other piece removably in position with its curved surface closely adjacent the shaft, a lever hinged on the removable piece on the side opposite the cylinder, a scraper blade on the lever, and means to urge the lever toward the shaft to cause the blade to engage the surface thereof.

5. A bearing seal for printing cylinders comprising a printing cylinder having a shaft, a bearing for the shaft, a two-piece shield, each of said pieces being formed with a curved surface adapted to lie closely adjacent the shaft, means to secure one piece rigidly in position with its curved surface closely adjacent the shaft, means to mount the other piece removably in position with its curved surface closely adjacent the shaft, a lever hinged on the removable piece on the side opposite the cylinder, a scraper blade on the lever, means to limit the movement of the lever with respect to the shield, and means to urge the lever toward the shaft to cause the blade to engage the surface thereof.

6. A bearing seal for printing cylinders comprising a printing cylinder having a shaft, a bearing for the shaft, a two-piece shield, each of said pieces being formed with a curved surface adapted to lie closely adjacent the shaft, means to secure one piece rigidly in position with its curved surface closely adjacent the shaft, means to mount the other piece removably in position with its curved surface closely adjacent the shaft, a lever hinged on the removable piece on the side opposite the cylinder, a scraper blade on the lever, means to mount the blade on the lever to lie in a plane at an angle to the axis of the shaft, and means to urge the lever toward the shaft to cause the blade to engage the surface thereof.

7. A bearing seal for printing cylinders comprising a printing cylinder having a shaft, a bearing for the shaft, a two-piece shield, each of said pieces being formed with a curved surface adapted to lie closely adjacent the shaft, means to secure one piece rigidly in position with its curved surface closely adjacent the shaft, means to mount the other piece removably in position with its curved surface closely adjacent the shaft, a lever hinged on the removable piece on the side opposite the cylinder, a scraper blade on the lever, means to mount the blade on the lever to lie in a plane at an angle greater than 90° to a plane transverse to the axis of the shaft on the side of the plane adjacent the cylinder, and means to urge the lever toward the shaft to cause the blade to engage the surface thereof.

8. A bearing seal for printing cylinders comprising a printing cylinder having a shaft, a bearing for the shaft, a two-piece shield, each of said pieces being formed with a curved surface adapted to lie closely adjacent the shaft, means to secure one piece rigidly in position with its curved surface closely adjacent the shaft, means to mount the other piece removably in position with its curved surface closely adjacent the shaft, a lever hinged on the removable piece on the side opposite the cylinder, a scraper blade on the lever, means to mount the blade on the lever to lie in a plane at an angle greater than 90° to a plane transverse to the axis of the shaft on the side of the plane adjacent the cylinder, means to limit the movement of the lever with respect to the shield, and means to urge the lever toward the shaft to cause the blade to engage the surface thereof.

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