

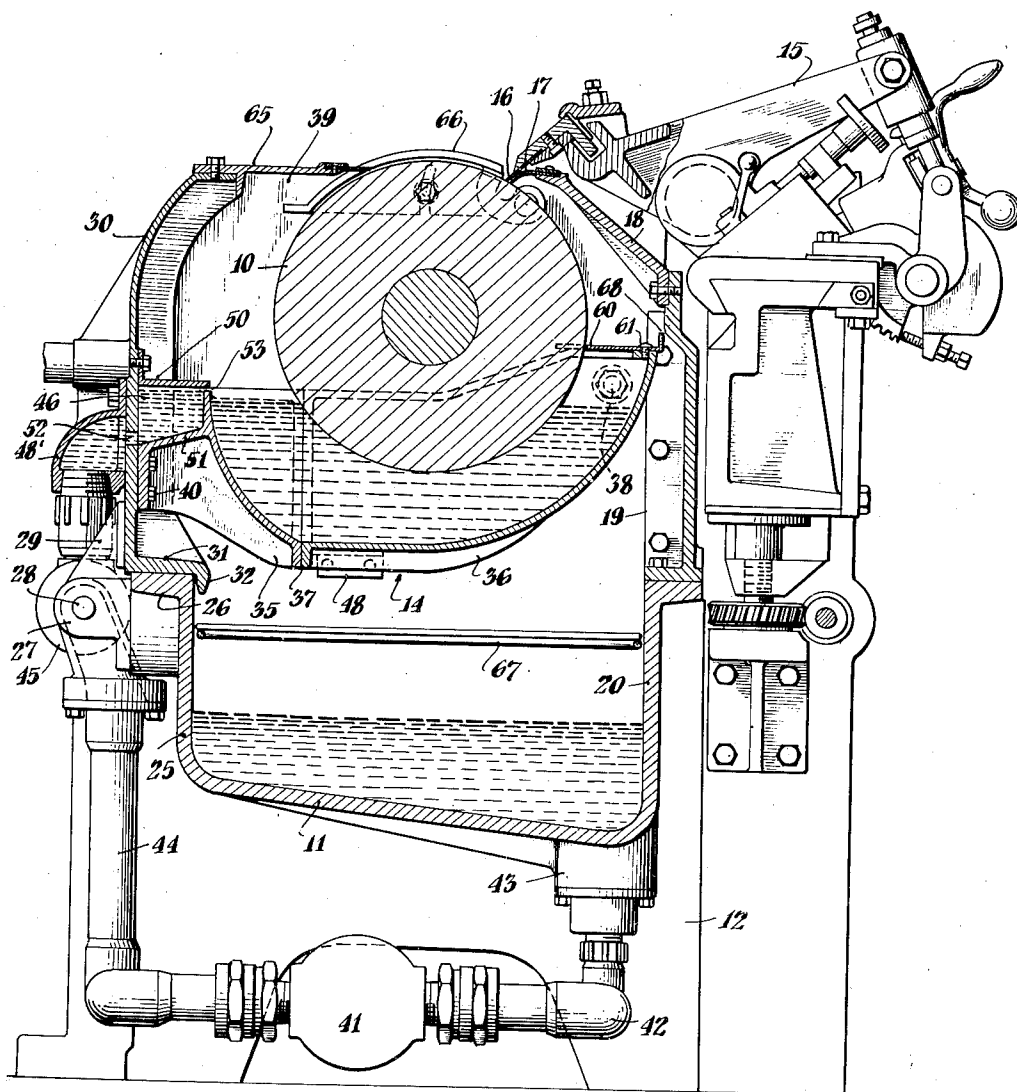
March 13, 1945.

C. S. CRAFTS

2,371,223

INTAGLIO PRINTING PRESS

Filed March 30, 1943



INVENTOR.
Carter S. Crafts
BY
Robert N. Durham
Attorney

UNITED STATES PATENT OFFICE

2,371,223

INTAGLIO PRINTING PRESS

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

Application March 30, 1943, Serial No. 481,065

9 Claims. (Cl. 101—157)

The present invention relates to intaglio printing presses and more particularly to the inking mechanism and means for such printing presses.

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 drawing, referred to herein and constituting a part hereof, illustrates one embodiment of the invention, and together with the description, serves to explain the principles of the invention.

It is an object of the present invention to provide an improved inking means for applying ink to the intaglio design cylinder of a rotary intaglio printing press. A further object is the provision of such inking means which insures the adequate inking of the intaglio design of the cylinder and is simple and economical in its construction and operation. Still another object is to provide an ink fountain for inking an intaglio design cylinder which supplies ink to the cylinder for the intimate and complete inking of the intaglio design thereon and is adapted to be easily and thoroughly cleaned when a printing run has been terminated. The invention further provides an ink fountain for a rotary intaglio printing press which is adapted for use with various sized design cylinders and with which the changing of design cylinders may be accomplished with comparative ease.

The accompanying drawing is a cross sectional view of an intaglio design cylinder of a rotary intaglio printing press and inking means for the cylinder, showing an illustrative embodiment of the present invention.

With the stated and other objects in view there is provided in an illustrative embodiment of the invention, as shown in the accompanying drawing, a rotatably mounted intaglio cylinder having an intaglio design on its periphery for intaglio printing in cooperation with a suitable impression cylinder and other parts of the customary rotary intaglio printing press. An ink fountain is provided substantially enclosing the intaglio design cylinder, and a trough is positioned within the fountain to hold a body of ink through which the intaglio design on the periphery of the cylinder is passed as the cylinder is rotated in

printing. The bottom of the ink fountain serves as a reservoir for ink not immediately utilized for printing, and a pump is provided to remove ink from the bottom of the fountain and supply it to an ink chamber at the side of the fountain opposite the direction of rotation of the cylinder. From the chamber the ink may flow into the ink trough to supply and replenish the body of ink therein available to ink the intaglio design.

At the side of the ink trough in the direction of rotation of the cylinder there is provided a baffle member or plate, which extends the length of the intaglio design cylinder and has an edge closely adjacent to the periphery of the design cylinder. The baffle plate is positioned slightly above the quiet level of ink in the trough and covers the space between the trough edge and the periphery of the design cylinder except for the small space between the edge of the baffle plate and the cylinder. The ink trough in operating position has no other available ink exit circumferentially of the cylinder between the ink entrance from the chamber and the baffle, so that as the design cylinder swiftly rotates it tends to force the ink body in its direction of rotation and against the baffle plate, creating a turbulence at the plate and impelling the ink into intimate and complete contact with the intaglio design as the ink seeks to escape between the baffle and cylinder.

The ink trough is formed of two semi-trough members or sections which abut along a line longitudinally of the trough. One of these sections is fixed to an upper side wall portion of the fountain, and this portion is pivotally mounted with respect to its fixed lower side wall portion. The pivotal upper side wall portion also carries the ink chamber communicating with the ink trough, and the side wall portion, ink trough section, and chamber may be pivoted outwardly for cleaning and to dump the ink in the trough into the fountain, a screen being arranged between the bottom of the trough and the bottom of the ink fountain.

The other semi-trough member or section is likewise pivotally mounted allowing access to the screen and ink fountain for thorough cleaning.

It will be understood that the foregoing general description and the following detailed description as well are exemplary and explanatory of the invention but are not restrictive thereof.

Referring now in detail to the illustrative embodiment of the present invention shown by way of example in the accompanying drawing, there is provided an intaglio design cylinder to co-

operate with an impression cylinder (not shown) for rotary intaglio printing. The design cylinder 10 is rotatably mounted and driven in any suitable and customary way and is almost completely enclosed by an ink fountain, the cylinder projecting above the fountain for cooperation with the impression cylinder in printing.

The ink fountain comprises a bottom portion 11 to hold a substantial ink supply in reserve and is mounted upon sturdy end frame members 12 which may be a part of the printing press frame. A trough indicated generally by the numeral 14 is provided within the ink fountain and in the upper portion thereof, and the trough encloses a portion of the design cylinder 10 so that as the design cylinder is driven in a counter clockwise direction in printing, the intaglio design on the cylindrical periphery of the cylinder will be carried through a body of ink in the trough and inked for later impression on the traveling web. A doctor blade mechanism indicated generally by the numeral 15 is provided, having a doctor knife 16 to bear against the periphery of design cylinder 10 closely adjacent to the place at which the traveling web contacts the design cylinder for taking the impression, the doctor knife cleaning off ink from the surface of the cylinder which is not deposited in the intaglio design. A sealing blade 17 is positioned beneath the doctor blade 16 and is supported by a bracket 18 mounted on the upper side wall portion 19 of the ink fountain, which in turn is mounted on the side wall portion 20 of the bottom portion 11 of the fountain. The doctor blade mechanism 15 may be of any conventional and appropriate design and the construction and operation thereof are well known and understood by persons skilled in the art, so that no more detailed description thereof need here be given.

The ink fountain for design cylinder 10 further comprises a lower side wall 25 of the bottom portion 11, said side wall having an outwardly turned flange 26 integral with its upper edge. The side wall 25 at its upper edge is provided with a plurality of outwardly extending brackets 27, to which are hinged by means of pins 28 the brackets 29 secured to an upper side wall portion 30 of the ink fountain. The side wall portion 30 is thus pivotally mounted for outward movement upon lower side wall portion 25, and has an inwardly extending flange 31 at its lower edge to rest upon flange 26 when the side wall portions are in closed relationship. An integral longitudinally extending lip 32 is provided on the flange 31 to prevent the escape of ink between side wall portions 25 and 30, and particularly when the fountain is opened as hereinafter described.

The ink trough 14 is formed of two semi-trough members indicated by the numerals 35 and 36, and these members abut against each other along a line longitudinally of the trough, as at 37, to form the closed trough 14 adapted to hold a body of ink for contact with design cylinder 10. The semi-trough member 36 is pivotally mounted on studs 38 which are secured to each end wall 39 of the ink fountain whereby the member may be moved upwardly. Brackets 48 fixed to end walls 39 of the fountain support semi-trough member 36 when it is in its lower position. The other semi-trough member 35 is secured by means of bolts 40 to the upper side wall portion 30, and thus is pivotally mounted for movement with said wall portion.

Means are provided for continuously supplying ink to the trough 14 in order to provide and main-

tain a body of ink therein, and as illustratively shown, comprise a pump 41 to draw ink through pipe 42 from a sump 43 which is positioned centrally of the length of the ink fountain bottom 11 and at the edge thereof, the bottom wall of the fountain inclining into the sump to insure the proper draining of ink.

Ink from pump 41 is forwarded through pipe 44 and through a movable joint 45 into an ink chamber 46. The ink chamber 46 lies on the inside of the upper side wall portion 30 and extends the length thereof, being formed by a longitudinal plate 50 secured to the wall portion, and by a bottom plate 51 which is formed integrally with semi-trough member 35. One or more ducts 52 allow the entrance of ink into chamber 46, and a slot 53 extending along the length of the chamber at its inner side allows the passage of ink into trough 14. A manifold 48 of about half the length of the ink fountain and positioned centrally of the length is provided to receive ink from the pump 41 before it passes into chamber 46 through ducts 52. Ink from the supply in the bottom of the fountain may thus be continuously supplied to the trough, the chamber 46 serving to dampen pulsations of ink and supply it in smooth and continuous streams to the side of the trough opposite the direction of rotation of the cylinder 10.

A baffle plate or member 60 is secured by screws 61 to the upper edge of trough 14 at its side in the direction of rotation of cylinder 10. Plate 60 extends the length of trough 14 and its inner edge lies closely adjacent the cylindrical surface of cylinder 10.

The upper side wall portion 30 may be provided at its top with a cover plate 65 extending toward cylinder 10 to prevent splashing and escape of ink, and different sizes of such cover plate may be installed for different sizes of design cylinders. An end plate 66 is also provided at each end of the fountain pivotally mounted on the end walls 39 of the ink fountain. An ink screen 67 is positioned in the bottom of the ink fountain beneath trough 14.

With the ink fountain shown and described it will be apparent that provision is made for the easy and efficient cleaning of the fountain and appurtenant parts and the changing of the design cylinder 10 when that is desired. The upper side wall 30 and semi-trough member 35 may be pivoted outwardly to drain the body of ink in the trough into bottom portion 11 of the fountain, and lip 32 will prevent the ink from escaping from the fountain when the semi-trough member is slightly pivoted. When the side wall 30 and member 35 are moved substantially outwardly, the cylinder 10 may be removed and replaced, and the chamber 46 and other parts of the fountain may be cleaned. The semi-trough member 36 may also be upwardly pivoted in order to give access to the screen 67 and bottom of the fountain for cleansing and repair purposes.

It will be noted that baffle plate 60 is positioned only a relatively short distance above the quiet level of ink in the trough 14, and that there is no other exit circumferentially of the cylinder for ink from the trough, in its assembled ink holding position, between the ducts 53 and the plate 60. Thus the body of ink in the trough will tend to be forced in the direction of plate 60 when the cylinder 10 is rotating for printing and considerable turbulence will result about the bottom surface of the plate. The ink can escape from the trough only in the relatively small spaces be-

tween the edge of plate 60 and the surface of the design cylinder 10 and between the ends of the cylinder and the ends of the trough. The ink will thus be forced into the most minute depressions of the intaglio design on the surface of the cylinder, and imperfect printing due to inking failure will be avoided. Ink escaping past the baffle plate 60 and wiped off by the doctor knife 16 may return to the bottom of the ink fountain 11 through a longitudinal slot 68 between plate 60 and side wall 19 of the fountain.

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. A rotary intaglio printing press including in combination an intaglio design cylinder, and an ink trough enclosing a lower portion of the design cylinder, said ink trough comprising a pair of semi-trough members abutting lengthwise of the design cylinder and each member being pivotally mounted, the pivots being spaced apart whereby pivotal movement of either member spaces the members apart.

2. A rotary intaglio printing press including in combination an intaglio design cylinder and an ink trough enclosing a lower portion of the design cylinder, said ink trough comprising a pair of abutting semi-trough members cooperating to hold ink about a portion of the design cylinder, said members each being movably mounted for movement toward and from the other along their abutting portions whereby the trough may be drained and access had to space beneath the trough.

3. A rotary intaglio printing press including in combination an intaglio design cylinder, an ink trough enclosing a lower portion of the design cylinder, said trough comprising a pair of semi-trough members abutting along a line lengthwise of the design cylinder, and means movably mounting each of the semi-trough members for moving the members toward and from said line.

4. An ink trough for holding ink about a lower portion of an intaglio design cylinder comprising abutting trough sections cooperating to hold ink at least one section being movably mounted for movement into and out of abutting relation with respect to the other section.

5. A rotary intaglio printing press including in combination an intaglio design cylinder, an ink fountain, an ink trough within the ink fountain enclosing a lower portion of the design cylinder, and means for supplying ink from the fountain to said trough, said trough comprising a pair of semi-trough members abutting along a line lengthwise of the trough and mounting means movably mounting said members into and out of abutting relation with respect to each other whereby ink in the trough may be returned to the bottom of the fountain.

6. A rotary intaglio printing press including in combination an intaglio design cylinder, an ink

fountain, an ink trough within the ink fountain enclosing a lower portion of the design cylinder, an ink strainer in the fountain beneath the ink trough, and means for supplying ink from the bottom of the fountain to the trough, said trough comprising a pair of semi-trough members abutting along a line lengthwise of the trough and means mounting said members for pivotal movement into and out of abutting relation with respect to each other whereby the ink may be drained from the trough into the bottom of the fountain and access may be had to the strainer and the bottom of the fountain when said members are pivoted.

7. A rotary intaglio printing press including in combination an intaglio design cylinder, an ink fountain partially enclosing the design cylinder, said fountain comprising a longitudinal side wall having a fixed lower portion and an upper portion pivotally mounted thereon for outward movement, and an ink trough without the fountain enclosing a lower portion of the design cylinder, said trough comprising a pair of semi-trough members abutting along a line lengthwise of the trough, one of said members being secured to said upper portion of said side wall for outward pivotal movement therewith and the second of said members being pivotally mounted for upward movement.

8. A rotary intaglio printing press including in combination an intaglio design cylinder, an ink fountain partially enclosing the design cylinder, said fountain comprising a longitudinal side wall having a fixed lower portion and an upper portion pivotally mounted thereon for outward movement, and an ink trough within the fountain enclosing a lower portion of the design cylinder, said trough comprising a pair of semi-trough members abutting along a line lengthwise of the trough, one of said members being secured to said upper portion of said side wall for outward pivotal movement therewith whereby the ink in the trough may be dumped into the bottom of the fountain when said member is moved outwardly, and a flange secured to one of said side wall portions and overlapping the other said side wall portion to prevent the escape of ink between said side wall portions when the upper side wall portion is outwardly pivoted.

9. A rotary intaglio printing press including in combination an intaglio design cylinder, an ink fountain partially enclosing the design cylinder said fountain comprising a longitudinal side wall having a fixed lower portion and an upper portion pivotally mounted thereon, an ink trough within the fountain enclosing a lower portion of the design cylinder said trough comprising a pair of semi-trough members abutting along a line longitudinally of the trough one of said members being secured to said upper portion of said side wall for outward pivotal movement therewith and the second of said members being pivotally mounted for upward movement, an ink chamber on the inner side of said upper side wall portion communicating with said trough, and means for supplying ink from the bottom of said fountain to said ink chamber.

CURTIS S. CRAFTS.