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INK FOUNTAIN FOR INTAGLIO PRINTING PRESSES

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2 Sheets-Sheet 1

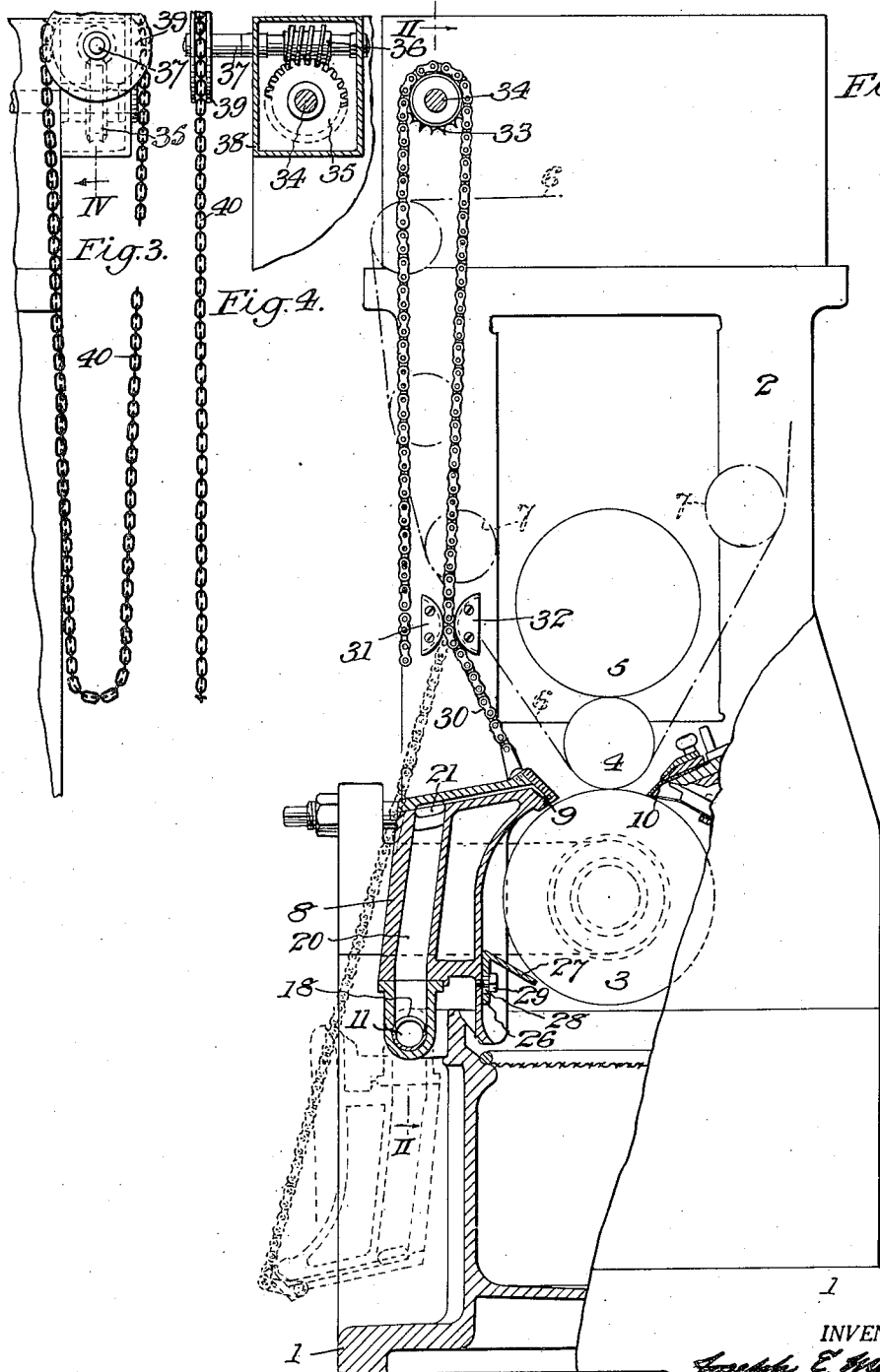


Fig. 1.

Fig. 3.

Fig. 4.

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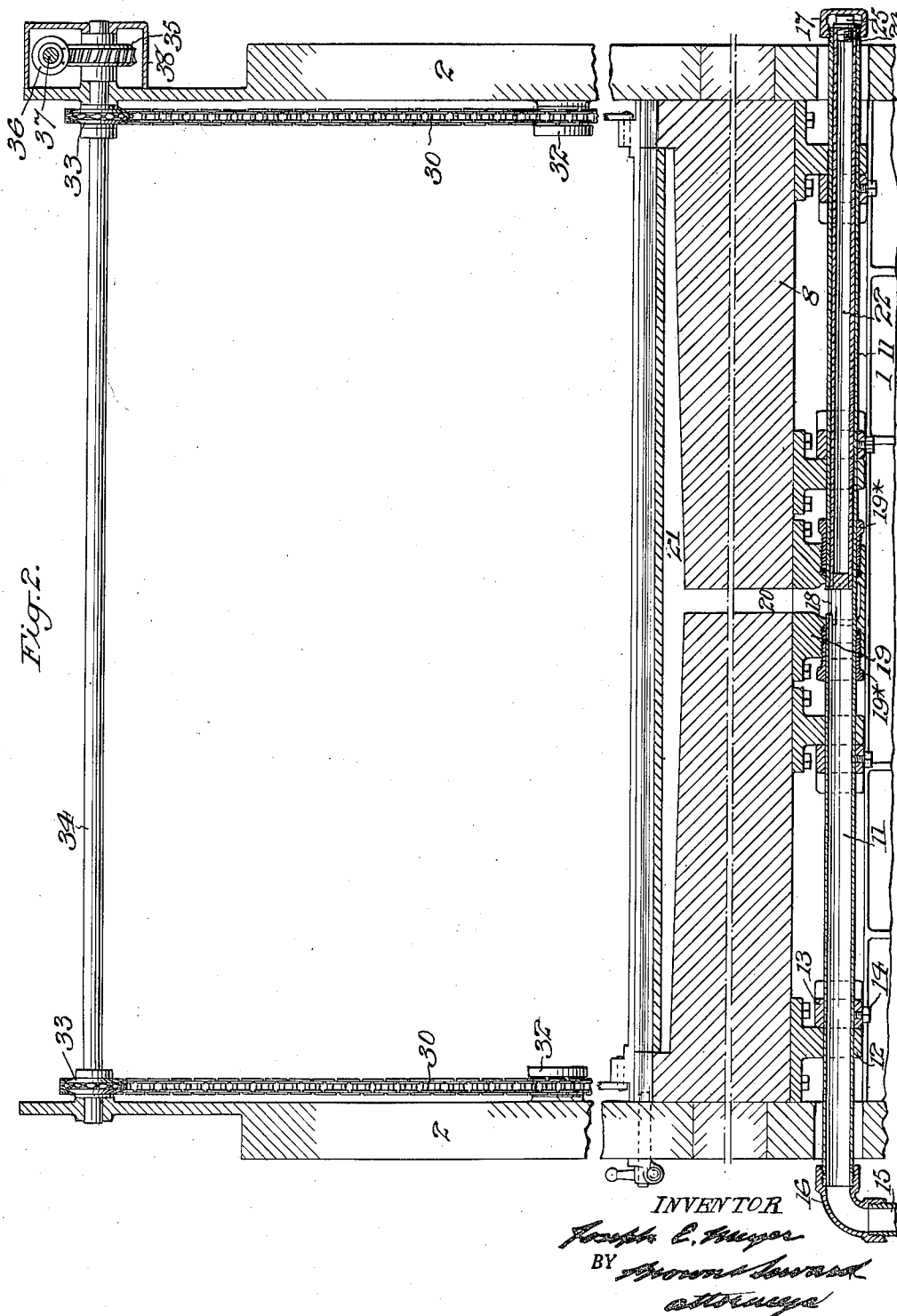
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2 Sheets-Sheet 2



## UNITED STATES PATENT OFFICE

2,460,184

## INK FOUNTAIN FOR INTAGLIO PRINTING PRESSES

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3 Claims. (Cl. 101—157)

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My invention is directed to improvements in enclosed ink fountains for rotary intaglio printing presses and particularly to the inking mechanisms thereof.

An object of my invention is to provide a horizontally disposed pipe for supplying ink to a pivotally supported inker head, the said ink supply pipe serving as the pivotal support for the inker head, thereby materially simplifying the ink fountain structure.

Another object of my invention is to provide means whereby the source of ink supply may be connected to either end of the ink supply pipe as may be found necessary or desirable.

Another object is to provide means for closing off the interior of the ink supply pipe beyond the port which brings the ink supply pipe into communication with the inker head passage, said means being preferably removable and reversible according to which end of the ink supply pipe is connected to the source of ink supply.

Another object is to provide novel means for ensuring a complete ink coverage of the printing surface of the printing cylinder, thus eliminating any blank spots or "ghosts" thereon caused by air bubbles in the ink which is supplied to the said printing surface, such means comprising a deflector located across the fountain in position to re-direct the ink thrown or dropped from the printing cylinder, back onto the printing cylinder and thus fill any depressions or blank spots thereon.

Another object is to provide novel and effective manually operated means, as, for instance, power increasing means for swinging the inker head easily into and out of its inking position.

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

Fig. 1 represents a detail view of the press partly in side elevation and partly in section, the inker head for the printing cylinder being shown in full lines in its raised or inking position and in dotted lines in its lowered or non-inking position;

Fig. 2 represents a detail vertical section taken in the plane of the line II—II of Fig. 1;

Fig. 3 represents a detail end elevation of the manual means for swinging the inker head, and

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Fig. 4 represents a detail section taken in the plane of the line IV—IV of Fig. 3.

The printing press frame includes generally the hollow base 1 and the uprights 2. The design or printing cylinder is denoted by 3, the impression cylinder by 4 and the pressure cylinder by 5. The web guide rollers for leading the traveling web 6 to and from the printing and impression cylinders are denoted by 7. These cylinders and rollers may be suitably mounted for rotation between the uprights 2, said mountings not being shown as they form no part of the present invention.

The pivotally supported inker head 8 has a wide discharge slot 9 extending across the top of the head, through its nozzle, which slot is located in position to direct the ink downwardly onto the upper surface of the printing cylinder at one side of the impression cylinder 4. This inker head forms the front wall of the upper portion of the fountain bowl.

The wiping mechanism includes a ductor blade 10 located in position to wipe the ink from the upper surface of the printing cylinder 3 at the opposite side of the impression cylinder 4 from the inker head discharge slot 9. This wiping mechanism will not be specifically described as it forms no part of the present invention.

Any well known or approved means, not shown, may be employed for removing and replacing the printing cylinder 3 through the front of the ink fountain when the inker head 8 is swung to its lowered or non-inking position.

A horizontally disposed pipe 11 is provided for supplying ink under pressure to the inker head 8, said ink supply pipe extending across the fountain and serving as the pivotal support for the inker head. In the present instance, the ink supply pipe passes through aligned pairs of hollow lugs 12 and 13 projecting from the inker head and base respectively and the pipe is firmly secured to the base lugs by set screws 14.

An ink supply line 15 leads from a suitable source of ink pressure supply, not shown, and it may be connected to either end of the ink supply pipe 11 as by a removable coupling 16, the other end of which pipe may be closed by a screw cap 17. This arrangement permits the ink to be supplied under pressure to the inker head through either side of the press.

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This ink supply pipe 11, about midway between its ends, has a side port 18 through which the ink is supplied to the inker head. The inker head 3 is provided with a hollow lug 19 which rotatably embraces the ink supply pipe at the side port to open communication from the interior of the ink supply pipe through the side port and the hollow lug to the vertical passage 20 in the inker head. This vertical passage 20 is in open communication, through the manifold 21, to the ink discharge slot 9. Suitable glands 19\* surround the ink supply pipe 11 and engage the hollow lug 19 upon opposite sides of the side port 18 to provide inktight joints.

Means are provided for closing the interior of the ink supply pipe just beyond its side port 18 to direct the ink upwardly through the hollow lug 19 into the vertical passage 20 and from thence through the manifold 21 to the ink discharge slot 9. In the present instance, this closure means is shown as a removable and reversible tube 22 having its inner and outer ends closed by plugs 23 and 24 respectively. The plug 24 is preferably provided with a squared projection 25 for facilitating the removal and insertion of the tube by a suitable instrument, not shown. This closed end tube 22 slidably fits the bore of the ink supply pipe 11 and is held in its inserted position by the screw cap 17. The contacting surfaces of the closed end tube 22 and the ink supply pipe 11 are preferably smeared with grease or other suitable material for preventing the leakage of ink between the tube and pipe and to also facilitate the removal and insertion of the tube. It will be understood that by the removal of the screw cap 17 the tube may be removed at any time for the purpose of cleaning the interior of the ink supply pipe 11.

Means are provided for ensuring the complete ink coverage of the intaglio printing surface of the printing cylinder 3 and thereby eliminating any bare spots or "ghosts" due to air bubbles in the ink stream directed onto the printing cylinder by the inker head. This means is shown as an ink deflector extending across the inner wall of the inker head 3 and mounted for vertical adjustment thereon to vary the width of the space between the edge of the deflector and the lower surface of the printing cylinder, as desired. This deflector is shown as comprising a base portion 26 and a downwardly inclined portion 27. To obtain the vertical adjustment of the deflector the base portion 26 may be provided with vertically elongated slots 28 through which clamping screws 29 are passed into threaded engagement with the inner wall of the inker head. One only of these slots 28 and its clamping screw 29 are shown in the accompanying drawings.

The downwardly inclined portion 27 of the deflector is arranged in position to re-direct the ink thrown or dropped from the peripheral surface of the printing cylinder back onto said surface, to ensure the filling of all of the depressions in the printing surface of the cylinder and any portions which may have been left bare by the ink directed onto the cylinder by the inker head.

Preferably the discharge slot 9 in the inker head is arranged, when in its inking position, to direct the ink downwardly onto the upper surface of the printing cylinder 3 above its axis and adjacent to the impression cylinder 4. The deflector is arranged to re-direct the ink onto the lower surface of the printing cylinder 3 on the

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same side; it being understood that the doctor blade 10 of the wiping mechanism is preferably located in contact with the upper surface of the printing cylinder adjacent to the other side of the impression cylinder 4.

The manually operated power increasing means shown herein for permitting the inker head to be easily swung between its raised and lowered inking and non-inking positions includes the following elements. Two side chains 30 are removably secured to the top of the inker head 8 at its ends and are led upwardly therefrom between guides 31, 32 on the uprights 2 to and around two chain pulleys 33 located near the ends of a cross shaft 34 rotatably mounted in the said uprights. One end of this cross shaft 34 is extended through one of the uprights 2 and it is there provided with a worm wheel 35 which meshes with a worm 36 of a hand shaft 37 rotatably mounted in the walls of a housing 38 on the said upright. Exterior to this housing, the hand shaft 37 is provided with a chain pulley 39 around which passes a hand chain 40 depending into convenient reach of the operator. It will be noted that in the drawings the chain guides 31, 32 are so positioned on the uprights 2 that the inker head 8 is positively swung past its vertical dead center as the head is swung away from its inking 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 an enclosed ink fountain for rotary intaglio printing presses, a hollow base, side uprights carried thereby, a rotary printing cylinder, a horizontally disposed ink supply pipe mounted on the base, an inker head pivoted on said pipe to be swung between a raised substantially vertical inking position and a lowered substantially vertical non-inking position, and manually operated power increasing means for swinging the inker head between said inking and non-inking positions, including a cross shaft mounted in said side uprights above the inker head, pulleys on said cross shaft adjacent said side uprights, side chains leading upwardly from the top of the inker head to and around said pulleys, and guides on said side uprights through which the side chains pass to ensure the positive movement of the inker head past its vertical dead center as the inker head is swung in one direction.

2. In an enclosed ink fountain for rotary intaglio printing presses, a hollow base, side uprights carried thereby, a rotary printing cylinder, a horizontally disposed ink supply pipe mounted on the base, an inker head pivoted on said pipe to be swung between a raised substantially vertical inking position and a lowered substantially vertical non-inking position, and manually operated power increasing means for swinging the inker head between said inking and non-inking positions, including a cross shaft mounted in said side uprights above the inker head, pulleys on said cross shaft adjacent said side uprights, side chains leading upwardly from the top of the inker head to and around said pulleys, and guides on said side uprights through which the side chains pass to ensure the positive movement of the inker head past its vertical dead center as the inker head is swung away from its inking position.

3. In an enclosed ink fountain for rotary in-

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taglio printing presses, a hollow base, side uprights carried thereby, a rotary printing cylinder, a horizontally disposed ink supply pipe mounted on the base, an inker head pivoted on said pipe to be swung between a raised substantially vertical inking position and a lowered substantially vertical non-inking position, and a manually operated power increasing means for swinging the inker head between said inking and non-inking positions, including a cross shaft mounted in said side uprights above the inker head, pulleys on said cross shaft adjacent said side uprights, side chains leading upwardly from the top of the inker head to and around said pulleys, a second shaft mounted on one of the side uprights and having a worm and gear connection with the cross shaft, a pulley on said second shaft and a hand chain passing around said pulley, and guides on said side uprights through which the side chains pass to ensure the positive movement of the inker head past its vertical dead center as the inker head is swung in one direction.

JOSEPH E. MEYER.

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