June 12, 1923.

1,458,860

R. SOLOMON

APPARATUS FOR CONSERVING INK

Original Filed Oct. 6, 1920 2 Sheets-Sheet 1

Fig. 1.

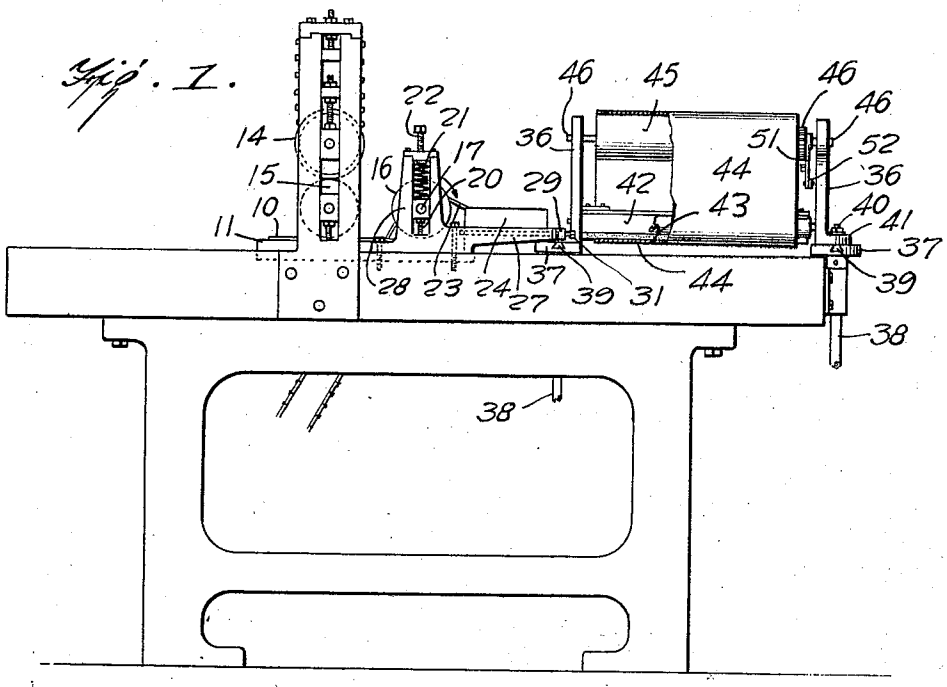


Fig. 3.

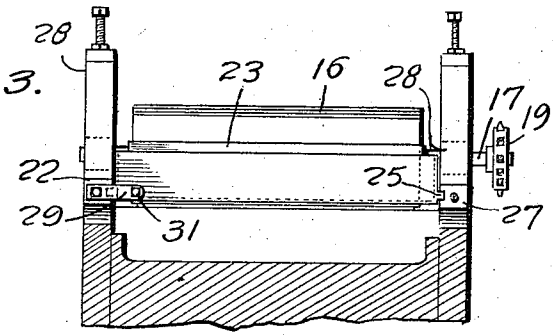


Fig. 5.

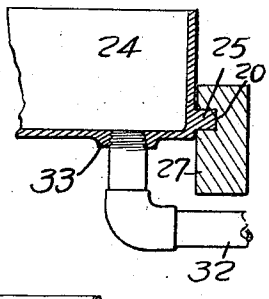


Fig. 4.

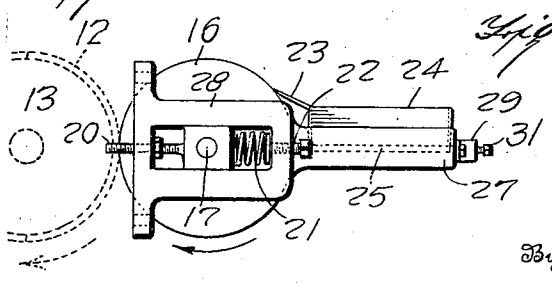
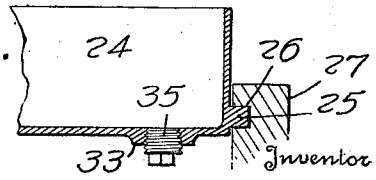


Fig. 6.



Inventor

RANDOLPH SOLOMON,

By Franklin H. Hough

Attorney

June 12, 1923.

1,458,860

R. SOLOMON

APPARATUS FOR CONSERVING INK

Original Filed Oct. 6, 1920 2 Sheets-Sheet 2

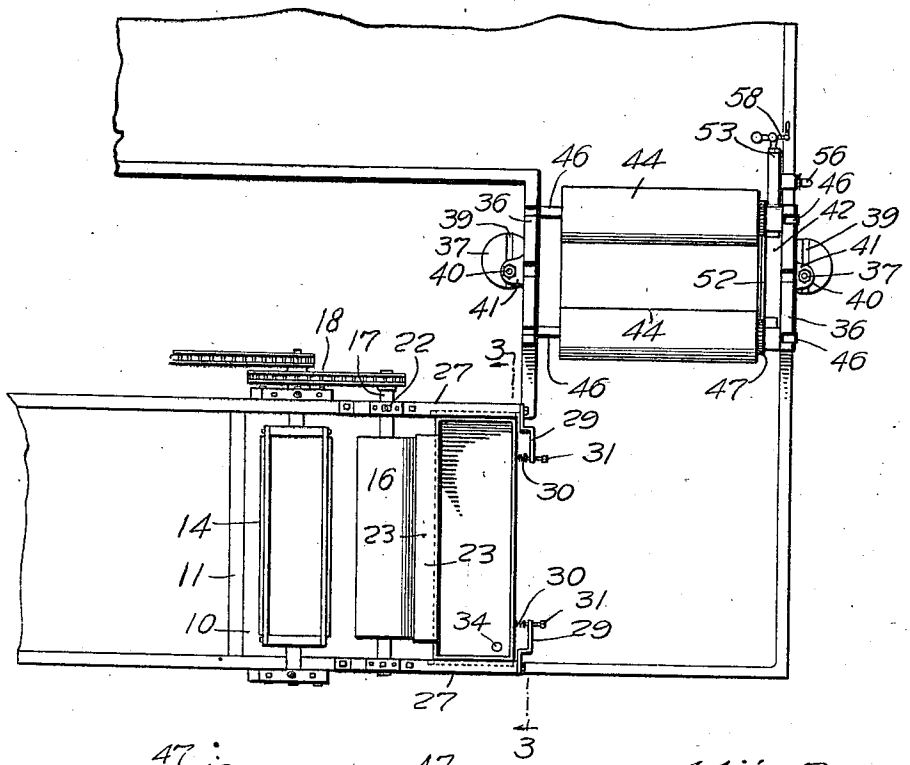


Fig. 2.

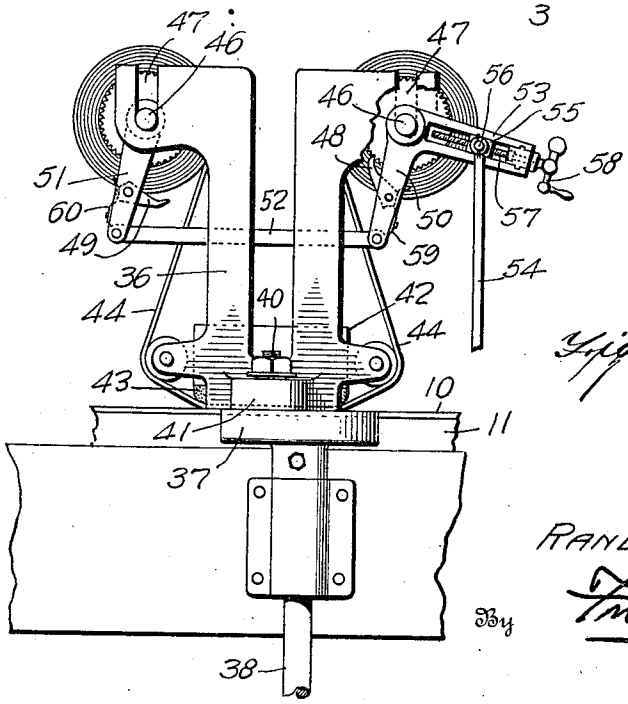


Fig. 7.

Inventor
RANDOLPH SOLOMON,
By Franklin H. Hoagland
Attorney

Patented June 12, 1923. 1,458,860

UNITED STATES PATENT OFFICE.

RANDOLPH SOLOMON, OF WASHINGTON, DISTRICT OF COLUMBIA.

APPARATUS FOR CONSERVING INK.

Application filed October 6, 1920, Serial No. 415,057. Renewed January 30, 1923.

To all whom it may concern:

Be it known that I, RANDOLPH SOLOMON, a citizen of the United States, residing at Washington, in the District of Columbia (whose post-office address is 305 D Street NW., Washington, D. C.), have invented certain new and useful Improvements in Apparatus for Conserving Ink, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to method of and apparatus for conserving ink in printing presses employing engraved plates, and has for an object to provide means for removing from the engraved plate the excess ink applied thereto and conveying the same to storage.

A further object of the invention is to provide a wiper moving in opposition to the movement of the engraved plate, with means for removing from the surface of the wiper the ink removed by such wiper from the plate, and conveying the ink to storage.

In the ordinary operation of printing from engraved plates, an excess of ink is applied to the plate to make certain the filling of the interstices of the engraving. This excess ink is ordinarily wiped from the plate and lost. The amount of ink so wiped from the plate is many times the amount of ink actually employed to fill the engraving, and the present invention has for an object the conserving of this excess of ink.

Fig. 1, is a view in side elevation of a conventional inking and wiping apparatus, with the present invention introduced therein, and seen in side elevation, parts being broken away to shown the wiping roller.

Fig. 2, is a top plan view of the device.

Fig. 3, is a sectional view taken on line 3—3 of Figures 1 and 2.

Fig. 4, is a view in side elevation of the apparatus, as applied to a rotary, or similar type of press.

Fig. 5, is a detail sectional view of the ink receiving box, and the means of discharging the ink therefrom.

Fig. 6, is a detail sectional view of the ink receiving box, with a plug replacing the discharging means, and is used when a thick or heavy ink is employed for printing.

Fig. 7, is a view in side elevation of the wiping mechanism following, or employed subsequent to the conserving wiper.

Like characters of reference indicate corresponding parts throughout the several views.

The improved ink conserving mechanism disclosed in the present application and for carrying out the improved method is adapted for use with presses employing either flat engraved plates or circular engraved plates. As shown at Figures 1, 2 and 3, a device is indicated wherein the flat plates 10 are carried upon the planks 11, whereas at Fig. 4, the circular or semi-circular plate 12 is indicated as carried upon the roller 13. In either case, the device and the operation of the device is substantially the same. The inking of the plate is accomplished as usual by means of the fountain roller 14 and the inking roller 15, as shown more particularly at Figures 1 and 2. The inking roller 15, which in practice is a felt roller, or a roller of some absorbent material, applies to the plate 10 or 12, ink under sufficient pressure to fill the engraving, and in sufficient quantity to fill the engraving, which quantity is also much in excess of the requirements. This excess ink is spread in a thin film over the entire plate, and it is this film of ink which the present invention is designed to remove and conserve. For this purpose a wiping roller 16 is employed, such roller being of any approved material. At the present time the practice indicates that this material will preferably be caoutchouc, although it is within the present invention to employ any material serving the purpose. This roller 16 is journaled upon a shaft 17, driven in any approved manner as by a sprocket chain 18 upon the sprocket 19, from the drive of the roller 14. Adjusting mechanism, comprising a limiting screw 20, a spring 21 and a tension screw 22, is employed for holding the wiper roller 16 in wiping engagement with the plates 10 or 12. The roller 16, as will be noted, is rotated in opposition to the movement of the plates 10 or 12, that is to say, the surface of the roller 16 engaging the plates 10 or 12, is moving in the direction opposite to the movement of the plate. The result of this movement is that the ink upon the plate in excess of that contained within the engraving is largely removed and carried upon the sur-

face of the roller until it comes into engagement with the scraper 23. This scraper 23 removes the ink from the surface of the roller 16, and conducts it to a box 24. This box 24 is preferably an open top box, so that the ink will flow directly over the scraper 23 into this box. The open condition of the entire top of the box is, however, immaterial to the present invention, the requisite being only sufficient space for the flow of the ink from the scraper 23 to the interior of the box.

For convenience, this box 24 is provided with a tongue 25 which engages a groove 26 in the arm 27. This arm 27 will preferably be integral with the bearing structure 28, which journals the roller 16, although such integrality is wholly immaterial to the present invention. The sliding movement of the box in the guide formed by the tongue and groove connection permits the movement of the box 24 so that the scraper 23 is held in scraping engagement with the roller 16. Such adjustment and tension is provided in any approved manner, preferably by the use of brackets 29, springs 30 and tension screws 31.

When a thin or comparatively liquid ink is being employed, a discharge spout 32 will be employed, which connects with a screw threaded boss 33 on the under side of the box, an opening 34 through the box forming communication with such outlet spout. When, however, a thick ink is being employed, the outlet spout 32 is removed and a plug 35 employed. See Figures 5 and 6. In the latter case, the ink is removed from the box 24 by any convenient hand implement. In the former, a receptacle is supported under the outlet end of the spout to receive the discharged ink.

The wiping roller 16 does not entirely complete the removal or wiping process, and a mechanically operated fabric wiper is further employed. This mechanical wiper is carried upon the frame adjacent to the inking mechanism and in the path of movement of the plate, following the operation by the wiping roller 16. This mechanical wiper comprises uprights 36 supported upon discs 37 driven by shafts 38. The discs 37 are provided with dove-tailed diametrical slots 39, and wrist pins 40 are secured therein, the adjustment being the same relative to both of the discs 37, whereby when the discs are simultaneously rotated in the same direction an eccentric movement of the wrist pins 40 is provided. These wrist pins 40 engage ears 41 integral or rigidly connected with the uprights 36, so that the rotation of the shafts 38 and discs 37 produces a local rotary action of such uprights. Between the uprights a block 42 is secured, having preferably a cushioning member 43, all so proportioned that the cushioning member in its local rotary movement is adjacent to the plate 10 in the flat plate type of apparatus. Between the cushioning member 43 and the plate 10 a fabric 44 is interposed with means for moving the fabric progressively as the work advances to present fresh or clean surfaces to the plate 10. This is accomplished by passing the fabric over rollers 45, journaled upon trunnions 46, having bearings in the uprights 36. The rollers or trunnions have rigidly secured thereto circular ratchets 47, and pawls 48 and 49, are provided for engagement with the ratchets to rotate the rollers with a step by step movement to wind and unwind the fabric 44. This step by step movement of the rollers may be accomplished in any manner as by fulcruming levers 50 and 51 upon the trunnions 46, and upon which levers 50 and 51 the pawls 48 and 49 are respectively pivoted. A connecting link 52 insures the synchronous operation of the levers 50 and 51, which operation may be accomplished in any approved manner, as by providing one of the levers 50 and arm 53, with a link 54, connected therewith, and reciprocated from any convenient mechanical source. To provide for variation of the step by step movement of the rollers 45, a block 55 is mounted to slide in the arm 53 and carry the pivot 56, whereby the link 54 is pivoted to the arm 53. An adjusting screw 57 and crank 58 complete the means for varying the throw of the arm 53 in the usual well known manner. The actuation of this device will therefore constantly move the fabric 44 with a local rotary motion in engagement with the plate 10, and the actuation of the ratchet mechanism will constantly present unsaturated surfaces of the fabric to the plate. Springs 59 and 60 are employed to hold the pawls 48 and 49, respectively, either in or out of operative engagement with its ratchet 47.

It is believed that the operation of the device and the method of conserving ink which will be accomplished by the employment of such apparatus will be thoroughly and completely understood from the foregoing description, without entering at large into a statement of the operation.

I claim:

1. An apparatus for removing and conserving ink applied in excess to a moving engraved printing plate comprising a wiper roller, an ink reservoir and scraper combined as a unitary structure, and means to adjust said unitary structure relative to the roller.

2. An apparatus for removing and conserving ink applied in excess to a moving engraved printing plate comprising a wiper roller, an ink reservoir and scraper combined as a unitary structure, and means to adjust said unitary structure radially relative to the journal of the wiper roller.

3. An apparatus for removing and conserving ink applied in excess to a moving engraved printing plate comprising a wiper roller, roller journals fixed against movement in the direction of movement of the plate but yielding transverse to such direction, an ink reservoir and scraper combined as a unitary structure, and means to adjust the unitary structure to apply the scraper to the periphery of the roller to remove the ink film from said roller and conduct it to said reservoir.

In testimony whereof I hereunto affix my signature.

RANDOLPH SOLOMON.