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INK FOUNTAIN SUPPLY AND DRAIN MEANS

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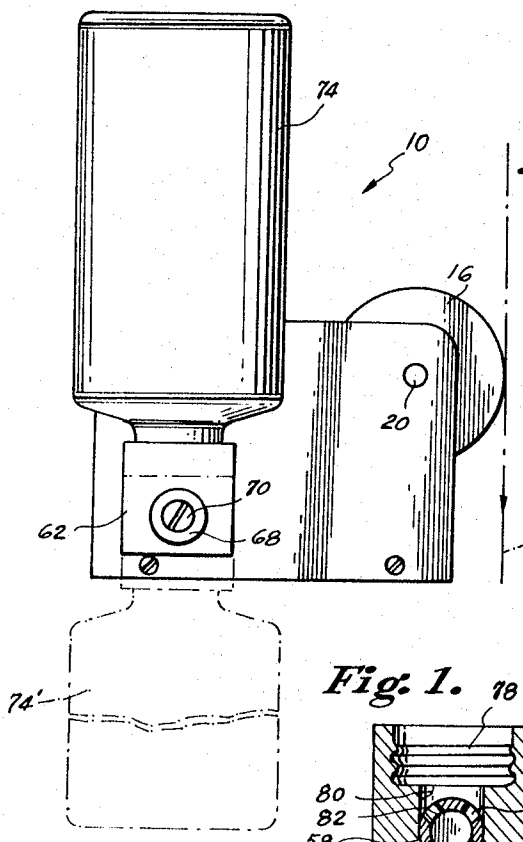


Fig. 1.

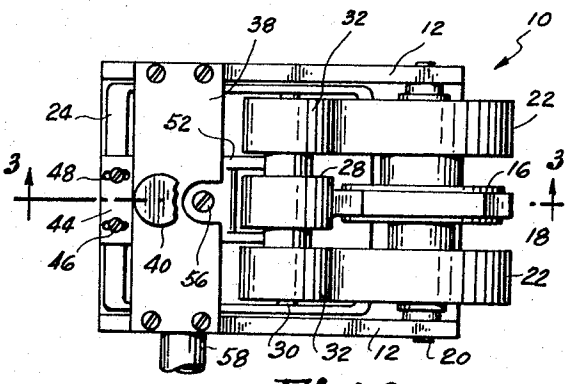


Fig. 2.

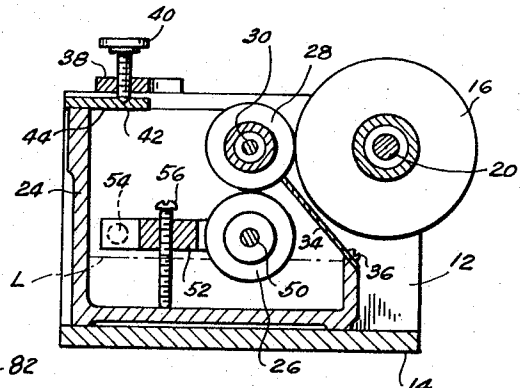


Fig. 3.

Fig. 5.

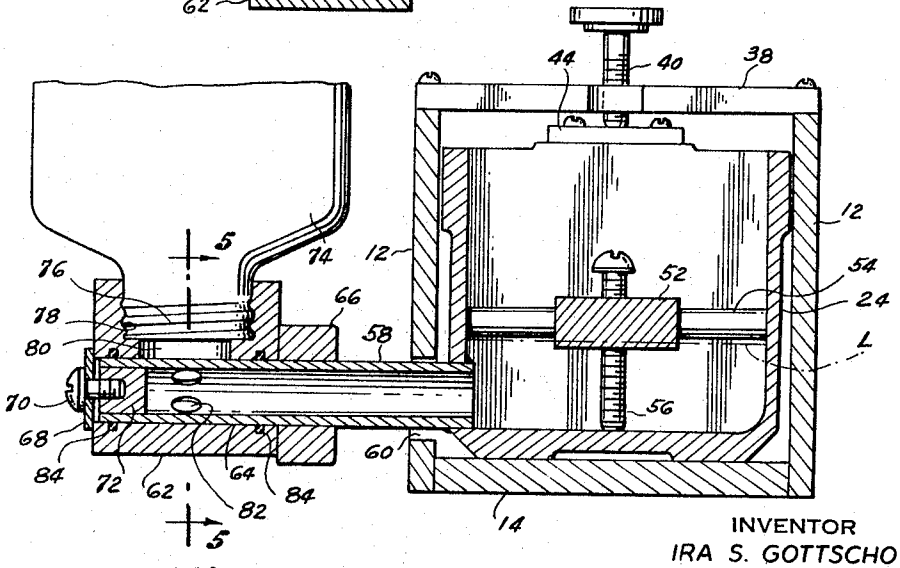


Fig. 4.

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INK FOUNTAIN SUPPLY AND DRAIN MEANS

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1 Claim. (Cl. 101—363)

This invention relates generally to inking systems for marking apparatus, and is particularly directed to improvements in inking systems of the type in which a rotatable inking roll is mounted to pick up in from a reservoir and is in rolling contact with a metering or ink transfer roll by which ink is transferred to the type or marking elements carried at the periphery of a marking wheel so that inked impressions are applied by the type to successive conveyed articles or to a continuous web or sheet.

In order to ensure uniform inking of the type or marking elements, it is desirable that a constant level of ink be maintained in the ink reservoir. In existing inking systems of the described character, the constant level of ink in the reservoir is achieved by providing a supply of ink in an inverted bottle or other container supported above the ink reservoir and having a feeding tube depending from the inverted bottle and opening, at its lower end, into the reservoir adjacent the bottom of the latter so that the feeding of ink from the container into the reservoir is barometrically controlled and occurs at the rate at which ink is withdrawn from the reservoir by the inking roll. However, the above described arrangement is disadvantageous in that, during periods of shut-down of the marking apparatus, a substantial quantity of ink remains in the reservoir and cannot be conveniently removed therefrom. The ink remaining in the reservoir hinders the thorough cleaning of the inking system or the changing of the color of the ink to be employed, and upon the removal of the reservoir with ink remaining therein there is the danger of spilling the ink. Further, if a substantial quantity of ink remains in the reservoir during shut-down periods, the lower portion of the inking roll remains immersed in such ink and this results in non-uniform accumulation of ink on the inking roll and non-uniform inking, particularly when operation of the marking apparatus is resumed.

Accordingly, it is an object of this invention to provide an inking system for marking apparatus of the type having an ink reservoir and a rotatable inking roll extending into the reservoir for picking up ink from the latter, and wherein a constant level of ink is normally maintained in the reservoir during the operation of the marking apparatus, but such ink is conveniently drained from the reservoir, for example, during shut-down periods of the marking apparatus.

In accordance with an aspect of this invention, an inking system of the described character is provided with a container for a supply of ink, and connecting means communicating the container with the reservoir, such connecting means including a turnable coupling at which the container can swing between a substantially erect, inverted position, where the flow of ink from the container into the reservoir is barometrically controlled to maintain a constant level of ink in the reservoir, and a shut-down position displaced at least 90 degrees from the erect, inverted position to permit ink to drain from the reservoir back to the container.

In a particular embodiment of this invention, the container for the supply of ink is in the form of a bottle or the like having a neck at one end defining an opening through which the ink can flow into and out of the container, and the connecting means for communicating the container with the reservoir includes a tube extending from the reservoir adjacent the bottom of the latter and

having a horizontally directed portion, and a mounting member turnable on the horizontally directed portion of the tube and having a socket which receives the neck of the bottle or other container and opens at the surface of the tube for communication with the interior of the latter through radial passages which are angularly spaced apart about the periphery of the tube.

The above, and other objects, features and advantages of the invention, will be apparent in the following detailed description of an illustrative embodiment thereof which is to be read in connection with the accompanying drawings, forming a part hereof, and wherein:

FIG. 1 is a side elevational view of a marking apparatus having an inking system in accordance with this invention, and with an ink supply container of the system being shown in two positions;

FIG. 2 is a top plan view of the apparatus, but with the ink supply container removed;

FIG. 3 is a vertical sectional view along the line 3—3 on FIG. 2;

FIG. 4 is an enlarged transverse sectional view; and

FIG. 5 is a detail sectional view taken along the line 5—5 on FIG. 4.

Referring to the drawings in detail and initially to FIGS. 2 and 3 thereof, it will be seen that a marking apparatus **10** having an inking system in accordance with this invention may include a frame made up of spaced apart, parallel side frame members **12** and a bottom plate or base **14** secured between the side frame members. A marking wheel **16** carrying type or marking elements **18** at its periphery is rotatably mounted on an axle **20** which is supported, at its opposite ends, in side frame members **12**. The type or marking elements **18** are intended to apply inked impressions to successive articles or a continuous web or sheet moving past the marking wheel along the path P (FIG. 1). During rolling contact of the type with the articles, the marking wheel is rotated, for example, through frictional contact of the successive conveyed articles with bearer rims **22** which are also turnable on the axle **20**.

In order to apply ink to the raised or operative surfaces of the type or marking elements **18**, the inking system of the apparatus **10** includes an ink reservoir **24** (FIGS. 2, 3 and 4) resting on the base **14** between side frame members **12**, an inking roll **26** which is rotatably supported to pick up ink from within reservoir **24**, and an ink transferring or metering roll **28** which is positioned for rolling contact with the inking roll **26** to receive ink from the periphery of the latter and for rolling and ink transferring contact with the raised surfaces of the type or marking elements **18**. The metering roll **28** may be rotatably mounted on an axle **30** (FIG. 3) having its opposite ends supported by the side walls of reservoir **24**, and the metering roll may be driven through bearer rims **32** (FIG. 2) which are also turnable about axle **30** and are in frictional rolling contact with the bearer rims **22** of the marking wheel. A doctor blade **34** (FIG. 3) may be secured by screws **36** to the front wall of reservoir **24** to regulate the thickness of the layer of ink carried by the periphery of metering roll **28** for transfer to the type or marking elements of marking wheel **16**. Further, the pressure of rolling contact of the ink carrying peripheral surface of metering roll **28** with type or marking elements **18** may be regulated by bodily shifting the ink reservoir **24**, and hence the axis of rotation of the metering roll within the frame. For example, in the illustrated apparatus, a bar **38** extends laterally between the top edges of side frame members **12** and a locking screw **40** extends downwardly through a tapped hole in the cross bar **38** and is engageable, at its lower end, in a recess **42** (FIG. 3) formed in a bracket **44** that is secured on the top edge of the back wall of ink reservoir

24. The attachment of the bracket 44 to the ink reservoir is by way of screws 46 extending through elongated slots 48 in the bracket 44 (FIG. 2). It will be apparent that, by loosening the screws 46, reservoir 24 can be bodily shifted on base 14 to either increase or decrease the contact pressure of the metering roll 28 with the type or marking elements 18, whereupon the screws 46 and the locking screw 40 are tightened to hold the reservoir in its adjusted position.

The inking roll 26 is rotated by reason of its rolling contact with metering roll 28 and is mounted on an axle 50 carried by one end of a yoke 52 which, at its other end, is pivotally supported from the side walls of reservoir 24, as at 54 (FIGS. 3 and 4). An adjustment screw 56 extends downwardly through yoke 52, intermediate the ends of the latter, and is engageable with the bottom of reservoir 24 so that screw 56 can be turned to angularly displace the yoke 52 about its pivotal supports 54 and thereby adjust the contact pressure of inking roll 26 against the peripheral surface of metering roll 28.

In accordance with this invention, the inking system of marking apparatus 10 further includes a tube 58 (FIGS. 2 and 4) opening into the reservoir 24 adjacent the bottom of the latter and having at least a portion that is horizontally directed. In the illustrated embodiment, the tube 58 is welded or otherwise secured in a side wall of reservoir 24 adjacent the bottom of the latter and extends laterally from the reservoir in a horizontal direction. As shown on FIG. 4, one of the side frame members 12 is formed with a slot 60 opening at the back end thereof to permit the tube 58 to project laterally from the reservoir to the outside of the frame. A mounting member or block 62 is formed with a bore 64 (FIG. 4) to receive the tube 58 and permit turning of the mounting member 62 about the tube. The mounting member 62 is axially constrained between a collar 66 secured on tube 58 and a washer or retaining ring 68 which is held at the outer end of tube 58 by a screw 70 engaging in a tapped bore provided in a plug 72 welded or otherwise fixed in the outer end portion of tube 58.

An ink supply container 74, which may be in the shape of a bottle, as shown, is formed with a threaded neck 76 at one end defining an opening through which ink can flow into and out of the container 74. The mounting member 62 is formed with a threaded socket 78 to receive the threaded neck 76 of container 74, and a radial passage 80 extends between the bore 64 of mounting member 62 and the socket 78. Holes 82 extend radially through the wall of tube 58 and are axially located along the latter so as to register with the radial passage 80 of mounting member 62. The holes 82 are angularly spaced apart about the periphery of tube 58, for example, at four angularly spaced apart locations which are displaced by 45 degrees from the vertical and horizontal planes, as shown on FIG. 5. Sealing rings 84 (FIG. 4) may be provided within the opposite end portions of bore 64 to prevent the leakage of ink between bore 64 and the outer surface of tube 58.

In will be apparent that, with the above described arrangement, the container 74 can be turned about the axis of tube 58 between an erect, inverted position, as shown in full lines on FIG. 1, that is, a position in which its neck 76 is disposed at the bottom of container 74 and the latter extends substantially above tube 58 and also above the bottom of reservoir 24. Alternatively, the ink supply container and its mounting member 62 can be turned about the axis of tube 58 to the position shown in broken lines and indicated at 74' on FIG. 1, that is, to a position in which the neck 76 of the container is at the top of the latter and the container extends substantially below tube 58 and also below the bottom of reservoir 24.

When the container 74 is in its erect, inverted position shown in full lines on FIG. 1, the supply of ink in container 74 flows through neck 76, passage 80 and registered radial openings 82 into the interior of tube 58 and through the latter into reservoir 24 until the head of ink in reservoir 24 and atmospheric pressure acting on the surface of such ink in the reservoir produces equilibrium with respect to the head of ink within container 74. As ink is removed from reservoir 24 by inking roll 26, there is a barometrically controlled flow of ink from container 74 into reservoir 24 for maintaining a constant level of ink in the latter during operation of the marking apparatus 10. However, during shut-down of the marking apparatus, the container 74 and its mounting member 62 are turned about tube 58 through an angle of 90 or more degrees from the erect, inverted position, for example, to the shut-down or draining position indicated at 74' in broken lines in FIG. 1, whereupon the ink within reservoir 24 drains back through tube 58, the openings 82 registered with passage 80, and the neck 76 into the container 74'.

It will be apparent that the filling of ink up to the desired level in reservoir 24, or the complete draining of ink from the reservoir is effected merely by turning container 74 to one or the other of its described positions. Thus, ink can be conveniently removed from reservoir 24 even during relatively short periods of shut-down of the marking apparatus, thereby to avoid uneven accumulation of ink on the inking roll 26, or when it is desired to effect a change in the color of the ink being employed.

Although an illustrative embodiment of this invention has been described in detail herein with reference to the accompanying drawings, it is to be understood that the invention is not limited to that precise embodiment, and that various changes and modifications may be effected therein by one skilled in the art without departing from the scope or spirit of the invention, except as defined in the appended claim.

What is claimed is:

In a marking apparatus having an ink reservoir and a rotatable inking roll extending into the reservoir for picking up ink from the latter, the combination of a container for a supply of ink having a neck with an opening through which ink can flow into and out of the container, a tube fixed in the reservoir adjacent the bottom thereof and opening into the reservoir, at least a portion of said tube being directed horizontally outwardly of the reservoir, a mounting member having a bore receiving said horizontally directed tube portion so as to be turnable on the latter, said mounting member having a socket opening radially outward of said bore and a radial passage between said bore and said socket and in which said container neck is mounted, and said tube having spaced circumferential openings communicating with said mounting member passage when the latter is positioned to dispose said container above the tube and thereby effect barometrically controlled flow of ink from the container into the reservoir for maintaining a constant level of ink in the reservoir and also when the mounting member is turned to dispose the container below said tube and thereby cause substantially complete draining of ink from the reservoir back to said container.

References Cited by the Examiner

UNITED STATES PATENTS

2,594,179	4/1952	Keil.	
2,764,180	9/1956	Bergman	137—453
3,145,653	8/1964	Lake	101—148 X

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