

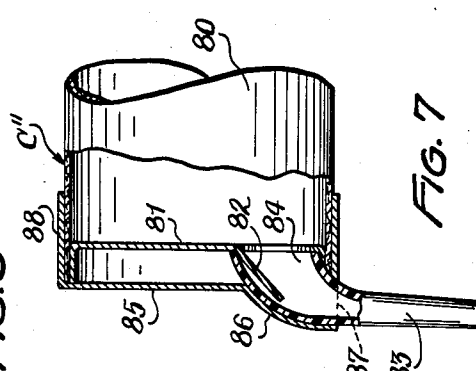
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INK DISPENSER

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INK DISPENSER

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The present invention relates to a printing press ink dispenser and process for dispensing ink onto the plates, rollers or ink fountains or printing presses.

The principal object of the invention is the provision of a new and improved ink dispenser for applying printing ink to printing presses comprising a cartridge holder having a plunger mechanism associated therewith, a disposable tubular cartridge removably attached in the holder and having one end closed by a wall or piston-like member adapted to be engaged by and advanced through the cartridge by the plunger to expel ink from the opposite end which is closed by means including a relatively rigid member having a spout operatively connected therewith, the inner opening of the spout being closed by a frangible wall adapted to be ruptured within an area encompassed by the base of the spout by ink pressure inside the cartridge whereby the ink is expelled through the spout. In the preferred form of the invention, the spout is transparent so that after the initial use of the cartridge and spout the color of the ink is apparent through the walls of the spout. Additionally, the spout is preferably readily removable from the cartridge to facilitate cleaning thereof so that it may be used on different cartridges of ink.

Another object of the invention is the provision of a new and improved dispenser of the character referred to having means for detachably securing the plunger to the end movable piston-like wall of the cartridge so that the wall may be moved in opposite directions to both expel and draw in ink through the spout.

A further object of the invention is the provision of a new and improved process of applying ink to the plates, rollers or ink fountains of printing presses which comprises forcing the ink from disposable cartridges as desired by moving one end wall of the cartridge thereinto and directing the ink forced from the opposite end of the cartridge through a spout operatively connected to the ink receiving portion of the press.

The invention resides in certain constructions, combinations and arrangements of parts and steps of process and further objects and advantages thereof will be apparent to those skilled in the art to which the invention relates from the following description of the preferred embodiments described with reference to the accompanying drawings forming a part of this specification, in which similar reference characters designate corresponding parts and in which—

Fig. 1 is a longitudinal sectional view of an ink dispenser embodying the invention;

Fig. 2 is a fragmentary enlarged view of a portion of the dispenser as shown in Fig. 1;

Fig. 3 is an enlarged perspective view of the spout shown in Figs. 1 and 2;

Figs. 4 and 5 are perspective views similar to Fig. 3 but showing different forms of spouts suitable for use in connection with ink dispensers embodying the invention;

Fig. 6 is a fragmentary sectional view similar to Fig. 2 but showing a modified construction, and

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Fig. 7 is a fragmentary sectional view of the discharge end of an ink cartridge showing another form or modification of the invention.

Referring to the drawings, an ink dispenser shown in Figs. 1 and 2, comprises a cartridge holding and plunger mechanism A including a tubular metal barrel 10 having one end closed by a wall 11 which is attached to and supported by a handle structure 12. The handle structure includes a channel shaped hand grip 13 having forwardly facing flanges 16, only one of which appears in the drawing, and to which the wall 11 of the barrel is suitably attached as by welding or rivets, not shown.

The handle structure 12 carries a plunger rod 17 guided for longitudinal movement in openings 18, 19 formed in the rear wall of the handle 13 and in the barrel wall 11, respectively. The left hand end of the plunger rod 17 is reduced in diameter and a nut 21, which has a circular plate 22 attached thereto, is threaded onto the rod. The rod 17 has a series of ratchet teeth 23 formed along one edge thereof and sloping to the right, which teeth are adapted to be engaged by two pawls 25, 26 for advancing the rod step by step to the left and into the barrel 10. The pawl 25 is pivotally carried on pin 27 at the upper end of a trigger 28 which is channel shape and pivotally attached between the sides of the handle 13 by a pin 29 supported by the handle sides. The trigger 28 is normally urged outwardly from the handle 13 by an A-shape spring 30 which is held in position by a lug 31 formed on the trigger. The pawl 25 is urged clockwise about its pivot pin 27 by a spring 32 so that the end thereof catches in the teeth 23 of rod 17 to move the rod to the left when the trigger is drawn toward the handle 13. When the trigger 28 is released, the spring 30 moves it outwardly from the handle and the pawl 25 is moved thereby to the right and in doing so rides over the teeth 23 without moving the rod.

The pawl 26 is operative to retain the gain of the rod 17 into the cartridge and accordingly it is pivoted on a pin 33 secured in opposite sides of the hand grip and is normally urged upwardly into engagement with the teeth 23 of the rod 17 by a spring 36. It will be seen that the pawl 26 engages the teeth 23 and prevents outward movement of the rod 17; that is, movement of the rod 17 toward the right when the trigger 30 is moved outwardly and pawl 25 moved to the right. When the rod 17 is advanced into the barrel 10 by the pawl 25, pawl 26 is deflected and does not interfere with this movement of the rod. Any other suitable plunger actuating mechanism could be employed, preferably having a device for advancing the plunger rod in steps and retaining the gain thereof into the cartridge.

Preferably, a roller 37 is positioned above the rod 17 and rides on the top portion thereof to prevent binding of the rod on the edges of the openings 18, 19.

The plunger rod 17 has a pin 38 through the right hand end which forms a handle by which the rod may be rotated to move the teeth 23 thereof out of alignment with the pawls 25, 26 so that the rod may be withdrawn from the barrel 10.

In the form shown, the outer end of the barrel 10 is closed by a plate-like cap 40 which is detachably connected to the barrel by a bayonet type connection and for this purpose has a peripheral flange 41 having opposed sections inset to provide overhanging arcuate shoulders 42, 43. The end of the barrel 10 has two opposed rearwardly turned peripheral flanges 46, 47 which are spaced apart at opposite sides to receive the shoulder sections 42, 43 of the cap when the latter is removed and replaced on the barrel, and they engage the shoulder sections to retain the cap 40 over the end of the barrel when the shoulder sections are moved into alignment therewith by rotating the cap relative to the barrel.

A disposable cartridge C containing suitable printing ink I is adapted to be received inside the barrel 10, and in the form shown in Fig. 1, it comprises a cylinder 50, which preferably is formed of inexpensive disposable material, such as paper or the like, having one end closed by a flanged disk 51 and the opposite end closed by a disk 52. The disk 51 may be formed of relatively rigid material, such as sheet metal, and is press fitted into the cylinder 50 so that ink will not seep therearound. In the preferred form, the disk 51 has a bolt 53 extending through a central opening, which bolt is secured in place by a nut 54 threaded thereon. When the cartridge C is inserted into the barrel 10 it is rotated so that the bolt 53 is threaded into the nut 21 so that the disk 51 will be secured to the plunger rod 17 and can be moved in opposite directions in the cartridge by the plunger rod. Alternatively, the bolt 53 could be omitted and the disk 51 engaged by the plate 22 so that the disk would be moved through the cartridge by the rod 17 in one direction only. In the latter instance when the rod 17 is withdrawn the disk 51 will remain in its most advanced position inside the cartridge. In either case, the disk 51 serves as a closure for one end of the cartridge as well as a piston to force ink therefrom.

The disk 52 is preferably of sheet metal and is flanged similarly to disk 51 and is likewise press fitted into the end of the cylinder 50. As may be clearly seen in Fig. 1, the disk 52 is concave and a circular flap 57 is cut in the central portion thereof. The cut forming the flap 57 is less than 360° to provide a hinge for the flap. The flap is left in place by the cutting operation so that an effective seal is provided for the ink in the cartridge until the cartridge is used. This seal is illustrated in Fig. 2. The closure will rupture under moderate pressure of ink inside the cartridge and the flap will move outwardly to the position shown in Fig. 1, when the disk 51 is forced inwardly of the cartridge by the plunger rod 17.

A spout 60 is adapted to be held to the disk 52 to direct ink from the cartridge onto the plates, rollers or ink fountains of printing presses. In the form shown in Figs. 1, 2, 3 the spout 60 has a base portion 61 comprising a convex flange 62 which nests in the concave portion of the disk 52 so that the base of the spout is centered in registration with the opening closed by the flap 57. The base portion 61 is enlarged relative to the outer portion of the spout to provide a cavity 63 to receive the flap 57 when it is forced outwardly. In addition, the enlargement forms an annular external shoulder 64 lying in a plane extending transversely of the axis of the spout and which is engaged by portions of the cap 40 adjacent to a central opening 65 therein through which the spout 60 projects when the cap is attached to the barrel 10. By this construction, the cartridges can be stored and handled with the spouts unassociated therewith, and when they are to be used are merely placed inside the barrel 10, a nozzle 60 fitted to the disk 52 and the cap 40 attached to the barrel 10 as described to hold the cartridge in the barrel and the nozzle to the closure disk at the discharge end of the cartridge. In order to provide a snug engagement between the nozzle, cap and cartridge, a suitable resilient gasket 66 is interposed between the cap 40 and the end of the barrel 10. Preferably, the spout 60 is formed of a transparent material such as a clear plastic, so that the color of the ink in a partially used cartridge will be readily apparent. The discharge end of the spout is supplied with a cup-shaped closure or cover 67 which is frictionally attached to the end thereof when the dispenser is not being used to prevent drying and caking of ink in the spout.

As mentioned previously, the sealed cartridges can be shipped and stored without the spouts being associated therewith and when ready for use, the spouts may be readily operatively connected therewith by attaching the cap 40 over the end of the barrel 10 as described. When the ink is exhausted from the cartridges they may be disposed

of and the spouts used therewith cleaned and reused with unspent cartridges.

In the form of spout shown in Figs. 1, 2, 3, the outlet end thereof is round, but the spout outlet and/or outlet end may be of any desired configuration, such as, rectangular in cross section, as shown in Fig. 4. This form of opening produces a ribbon of ink which facilitates the spreading thereof on the plates or rollers.

Still another form of spout is shown at 60' in Fig. 5 wherein the stem portion of the spout is curved and the opening in the outer end thereof is rectangular in cross section. The base portion of the spout 60' is like that of spout 60. The curved form of the spout facilitates placing the ink in more or less inaccessible areas.

Another form of ink cartridge is shown at C' in Fig. 6. This cartridge comprises a paper cylinder 70 having the ink discharge end thereof closed by a web 71 of wax paper or the like which is secured in place by a flanged cap 72 placed over the end of the cartridge and crimped thereto as indicated at 73. The opposite end of the cylinder 70, not shown, is closed by a disk similar to disk 51. When the cartridge C' is to be used a spout 74 is attached to the cap 72 and the cartridge then placed in the barrel 10 of the mechanism A, as described with reference to cartridge C. The spout 74 has a flange at the base having a peripheral groove 75 therein which receives the edges of an opening 76 through the cap 72. The material of the spout is resilient and therefore slightly compressible so that the base may be pressed and resiliently held in the opening through the cap. The spout 74 has a shoulder 77 which corresponds to the shoulder 64 of the spout 60 and which is engaged by the portions of the cap 40 adjacent to the edges of the opening therethrough to assist in securing the spout in place.

When the plunger rod 17 is moved by the trigger 30, the increase in pressure of the ink causes the paper web 71 to rupture about the edges of the inlet opening of the spout 74 since the opening in the spout offers no support for the paper web.

The spout 74 has a closure cap 78 which may be placed on the outer end thereof to prevent drying of ink in the spout.

Referring to Fig. 7 still another form of ink cartridge is shown at C''. As shown in this figure, the cartridge comprises a paper cylinder 80 having its discharge end closed by a flanged disk 81 which has a flap 82 formed adjacent to one side thereof and similarly to the flap 57 of the disk 56. A spout 83 is provided having a flared base portion 84 which is adapted to engage the disk 81 and encompass the edges of the flap 82 and receive the flap therein when it is pressed outwardly, as shown. The stem portion of the spout 83 is curved and projects laterally at approximately 90° to the axis of the spout opening in the base thereof and extends well beyond the sides of the cartridge so that ink may be deposited on surfaces parallel to the axis of the cartridge.

The spout 83 is held in place by a flanged cap 85 having a raised portion 86 which conforms to the curved portion of the spout and is adapted to engage the latter to hold it in position against the disk 81 and over the flap 82. An opening 87 is formed in one side of the raised portion 86 through which the spout projects. The cap 85 has a peripheral flange 88 which frictionally engages the sides of the cartridge to retain the cap in place on the cartridge. The opposite end of the cylinder 80 is closed by a disk, not shown, similar to disk 51.

In using the cartridge C'' in the plunger mechanism A the cap 40 is omitted and a cap, not shown, is substituted therefor having an opening to accommodate the raised portion 86 of the cap 85 and the laterally projecting spout 83.

It will be understood that the cartridges of ink shown and described could be used in any suitable holders having plunger mechanisms for forcing the ink therefrom and that the holder A is only one example of such mecha-

nisms. For instance, the cartridges C', C'' could be employed in holders comprising a socket in which the plunger receiving ends of the cartridges are placed and a wire bail extending across the outer ends of the cartridges to hold them relative to the plunger. The plunger could be advanced through the cartridges by any suitable means.

It will be seen that the present invention provides a dispenser for printing ink which is handy for storing and enables ink to be conveniently and economically applied to printing presses. Wastage of ink is minimized by close control of the application thereof afforded by the dispenser, and excess ink may be recovered from the presses by drawing the plunger rod 17 to the right and moving the end wall 51 toward its original position to thereby create a suction and draw in ink through the nozzle of the cartridge.

While the preferred embodiments of the invention have been described in considerable detail, I do not wish to be limited to the particular constructions and processes shown and described which may be varied within the scope of the invention, and it is the intention to cover hereby all adaptations, modifications and arrangements thereof which come within the practice of those skilled in the art to which the invention relates.

Having thus described my invention, I claim:

1. As an article of manufacture, a printing press ink dispenser comprising handle structure having a sleeve-like cartridge seat, a tubular cartridge containing a quantity of printing ink received by said seat, a cap member adapted to fit over the outer end of said cartridge for holding said cartridge in said seat, a disk-like member operatively connected to and closing the outer end of said cartridge and having a concave portion facing outwardly from said cartridge, said disk-like member having an aperture there-through normally closed by a flap formed of material partially cut therefrom and adapted to be moved outwardly to open said aperture upon the application of pressure thereagainst by said ink, a spout extending outwardly from said disk-like member and aligned with said aperture, said spout extending outwardly through an opening in said cap member and having a convex base portion adapted to nest in said concave portion of said disk-like member, a shoulder on said spout adjacent to the opening in said cap member and facing the discharge end of said spout, said cap member including means for con-

necting said cap member to said structure and for causing said cap member to engage said shoulder to press said base portion against the outer end of said cartridge, piston-like means closing the opposite end of said cartridge and movable through said cartridge, a plunger aligned with said cartridge, means supporting said plunger in said handle structure for movement lengthwise of said cartridge, means for advancing said plunger relative to said handle structure to move said piston-like means through said cartridge to place the ink therein under pressure and move said flap and force ink outwardly through said spout.

2. In a dispensing device, a cartridge containing material to be dispensed and having a movable piston closing one end thereof and an aperture in the other end thereof for discharging the material to be dispensed from the cartridge, a handle structure including a member for receiving said cartridge, plunger means carried by said structure and engageable with said piston, means carried by said structure and operatively connected to said plunger means for advancing said plunger means to move said piston through a dispensing movement, a cap adapted to fit over said other end of said cartridge to secure the cartridge in place in said member, a removable spout aligned with said aperture and having a laterally extending base portion, said base portion being positioned intermediate said cap and said cartridge and the spout extending outwardly of said cap through an opening therein, abutment means on said spout adjacent the inner side of the opening in said cap and engageable by said cap, said cap including means for connecting said cap to said member and for causing said cap to engage said shoulder to press the base portion of said spout tightly against the adjacent end of said cartridge.

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