No. 858,669. PATENTED JULY 2, 1907.

W. E. RADTKE.

INK RECEPTACLE.

APPLICATION FILED MAR. 19, 1906.

3 SHEETS—SHEET 1.

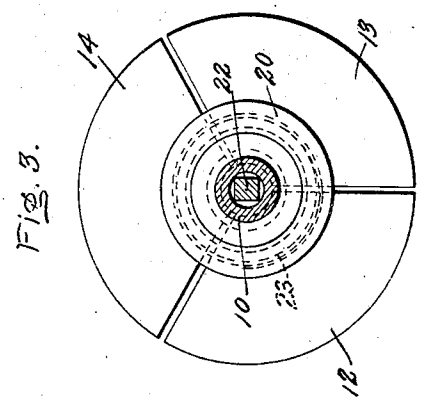

Fig. 3.

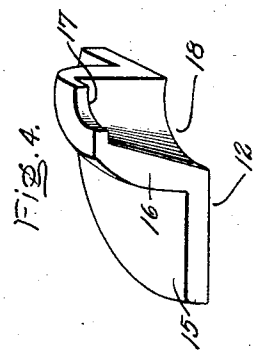

Fig. 4.

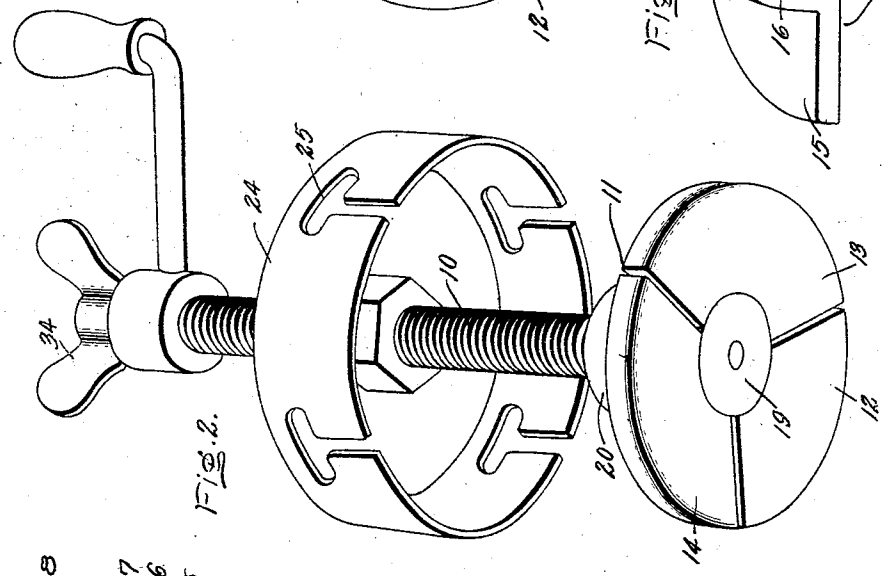

Fig. 2.

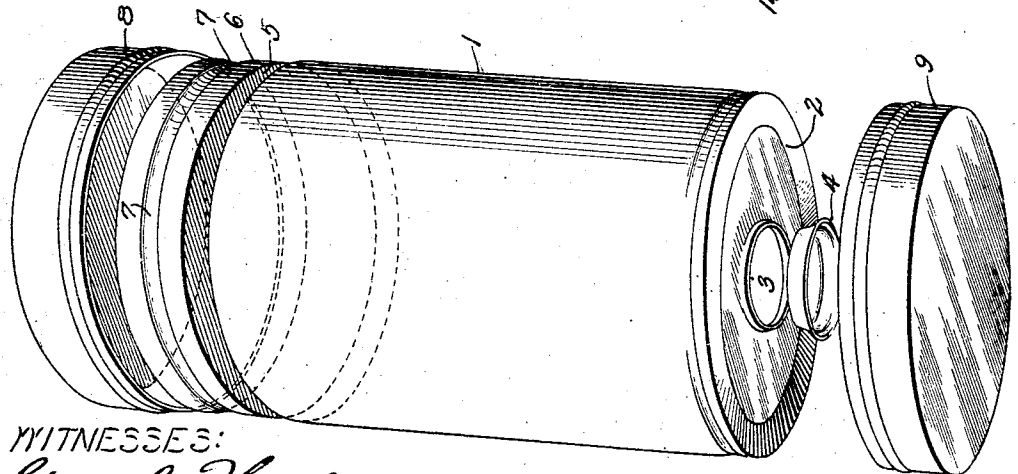

Fig. 1.

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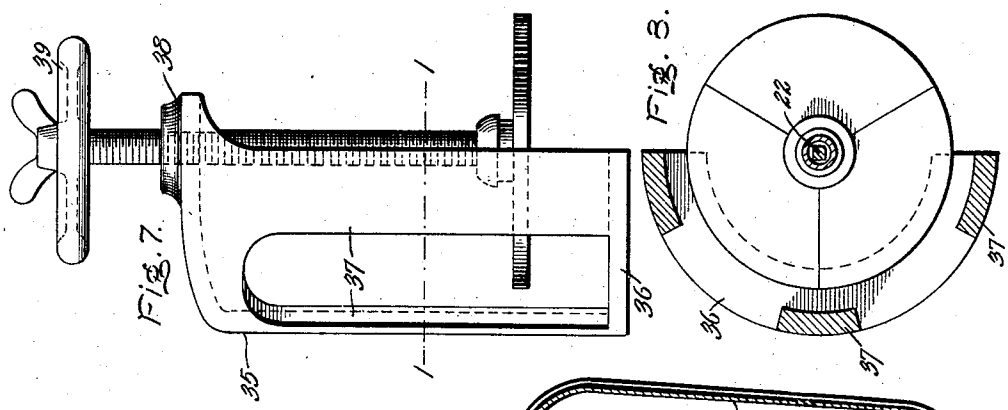

Fig. 7.

Fig. 8.

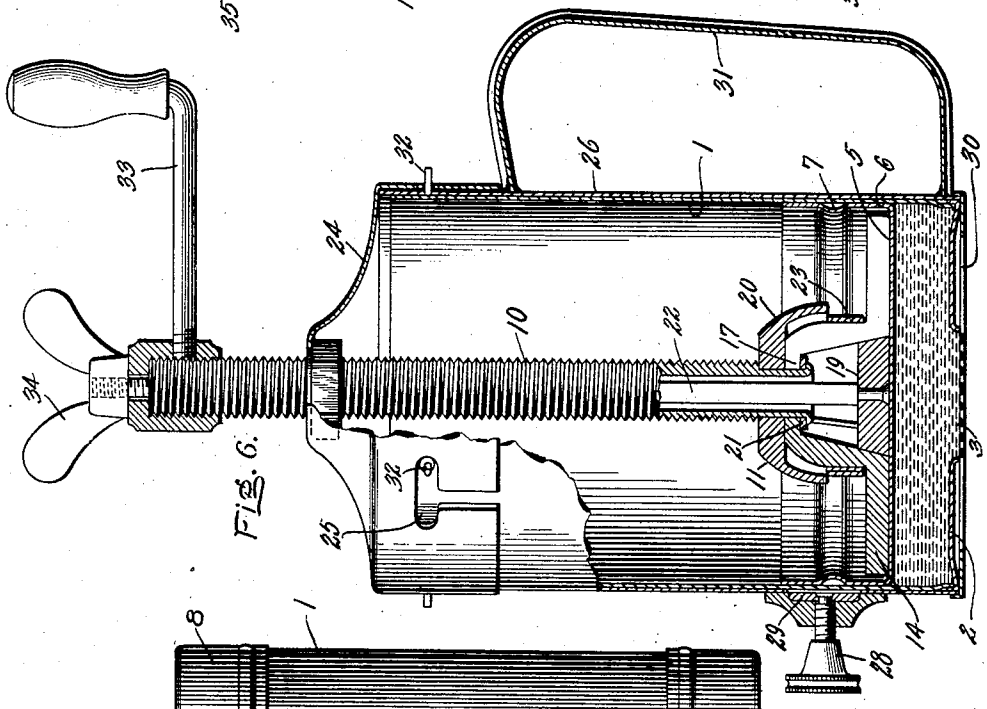

Fig. 6.

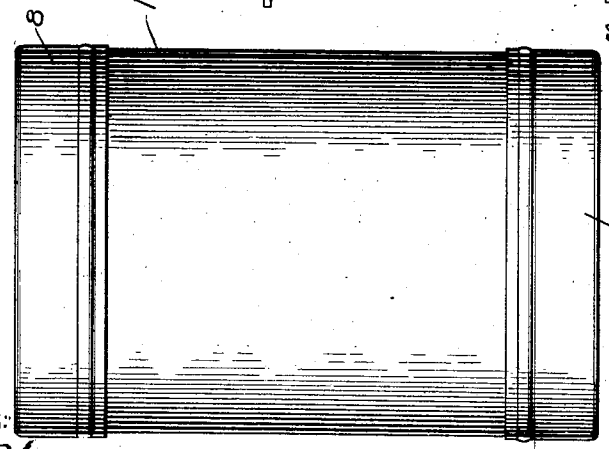

Fig. 5.

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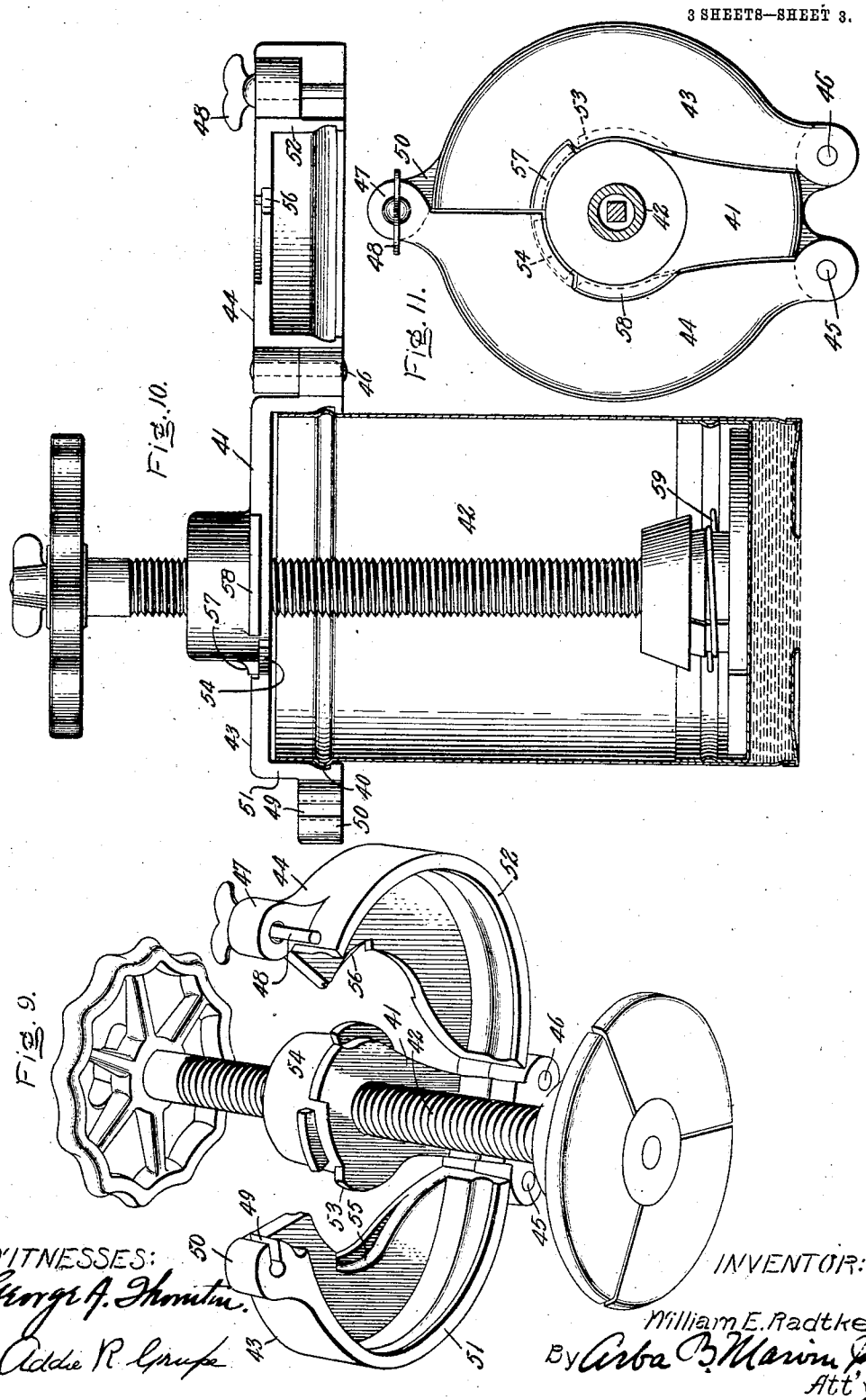
3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

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INK-RECEPTACLE.

No. 858,669. Specification of Letters Patent. Patented July 2, 1907.

Application filed March 19, 1906. Serial No. 306,797.

To all whom it may concern:

Be it known that I, WILLIAM EDWARD RADTKE, a citizen of the United States, residing at Milwaukee, county of Milwaukee, State of Wisconsin, have invented certain new and useful Improvements in Ink-Receptacles, of which the following is a specification.

My invention relates to improved means for shipping and storing printers' ink, and to novel means for ejecting the ink from the shipping and storing vessel whereby is attained a marked saving and an increased uniformity in the ink, together with other advantages pointed out more in detail hereinafter.

Printers' ink as ordinarily put on the market is stored in tin cans having removable tops. It is customary for the printer to remove the ink, as needed, by digging down into the semi-fluid ink with an ink knife, thus removing the desired quantity and transferring it to the inking plate of the press or to the ink fountain commonly provided. Exposure to the air causes a crust or "skin" to form over the surface of the ink remaining in the can, and if this crust is removed each time the ink is used there results a considerable loss of ink, and if on the other hand the crust is not removed it clogs up the printing press mechanism and the type. The above mentioned method of removing the ink from an open can is subject to other serious disadvantages arising from certain peculiar characteristics of printers' ink. It is known that this ink becomes harder and less fluid with age, consequently when the ink at the bottom of the can is reached it is likely to be quite different in consistency from that nearer the top, and hence to operate quite differently in the press. The ink is also subject to change because of a diffusion of the oil or varnish in which the dry color of the ink is ground. This action also tends to harden the ink at the bottom of the can as it ages. So great are the losses due to "skinning" and hardening as above described that printers are sometimes compelled to throw away a considerable part of each can; and as printers' ink is very expensive it will be readily understood that this source of loss is a relatively large item in the operation of presses.

According to my present invention the ink is shipped and stored in a metal can provided with a small opening in the bottom and with a top which can be pressed down to force the ink through the bottom opening. By thus removing the ink from the bottom of the can the hardening due to age is in large measure counteracted by the upward diffusion of the lighter components of the ink, and the ink is therefore of uniform consistency. The entire exclusion of air completely prevents the formation of the crust or "skin" above mentioned.

The details of my invention will be better understood by reference to the accompanying drawing forming part of this specification, in which

Figure 1 is an exploded view of my improved form of shipping and storing canister; Fig. 2 is a perspective view of the plunger used in forcing the canister top into the can to expel the ink; Fig. 3 is a plan view of the plunger head; Fig. 4 is a perspective view of one of the three segments comprising the plunger head; Fig. 5 is an elevation of the canister shown in Fig. 1 with the parts assembled; Fig. 6 is a sectional elevation showing the ink can inserted in a jacket and with the plunger mounted on that jacket and in position to expel the ink; Fig. 7 shows a modified form in which the jacket consists of a cast skeleton; Fig. 8 is a plan view of the same on the line 1—1; Fig. 9 is a perspective view of a modification in which the jacket is dispensed with and the plunger mounted on a support which clamps directly to the can top; Fig. 10 is an elevation partly in section showing the plunger support unclamped and with one wing opened to expose the locking mechanism; Fig. 11 is a plan view of the plunger support.

The ink canister shown in Figs. 1 and 5 comprises a can 1 having a bottom 2 in which is a relatively small opening 3 fitted with a removable spring cap 4. This can is provided with a top 5 having an upwardly extending flange 6 in which is an annular swage 7. This top fits the can 1 very tightly and is movable down into the can to force the ink out through opening 3 in the bottom. The annular swage 7 serves not only to insure an ink tight joint between the cap 6 and the body of the can, but also coöperates in locking the cap to a movable piston, as hereinafter described. Over the top and bottom of can 1 fit the caps 8 and 9, thus completing the canister. This canister is well adapted for the shipping and storing of printers' ink and is of a size suitable for the commercial marketing of the ink. The double seal at each end insures freedom from leakage and protects the ink from deterioration through contact with air. In combination with this canister I employ a novel form of press to eject the ink from the can. The exact elements of this pressing mechanism vary somewhat in the several modifications hereinafter described, but all of them embody a plunger having a segmental head and a threaded shaft, means for imparting motion to the shaft and means for holding the plunger in operative position with respect to the ink can.

In Fig. 2 I have illustrated a plunger comprising a threaded shaft 10, and a plunger head 11 consisting of three adjustable segments 12, 13 and 14. Each of these segments comprises a flat base 15 and an upstanding annular flange 16 having an inwardly extending ledge 17. Within the annular flange is formed a cone shaped opening 18 and within this fits a conical spreader 19, shown in section in Fig. 6. The upstanding flanges of the segments 12, 13 and 14 fit loosely in an inverted cup 20 and their inwardly extending ledges 17 engage with a bur 21 riveted to the end of shaft 10, which as shown in Fig. 6, is made hollow and carries within it the small square auxiliary shaft 22 used for adjusting the position of the conical spreader 19 pivotally secured to the end

thereof. A flat band spring 23 surrounds and presses inward on the segment flanges and keeps the segments tight against the surface of the spreader 19.

Referring to Fig. 2, the plunger shaft 10 is shown threaded through a metal top 24 provided with bayonet joint slots 25. In Fig. 6, this top 24 and its supported plunger are shown in position on a cylindrical jacket 26 slightly larger than the ink can 1. The latter fits inside and is securely clamped in position by the thumb screw 28 which forces a small plate 29 through an opening in the side of jacket 26 against the side of can 1. The bottom of jacket is cut away at 30 to permit ready removal of the ink forced out of the can through the bottom opening 3. A handle 31 may be provided for the jacket 26.

The removal of ink from a shipping canister is effected as follows; the end caps 8 and 9 are removed and the spring cap 4 is pried out of the opening 3; the can is then inserted in jacket 26 and clamped with thumb screw 28; the plunger is then inserted and the jacket cap 24 run down on the threaded shaft 10 until the slots 25 engage with pins 32 to clamp the top firmly in place; the plunger may then be forced downward by turning crank 33 and the thick pasty ink will be slowly ejected from the opening 3 and may be scraped away with an ink knife or may be discharged directly into the ink fountain with which printing presses are commonly provided.

It should be noted that the can top 5 fits tightly within the can 1 and by virtue of its fit and the annular swage 7 makes an ink tight joint with the can and entirely prevents contact of the ink with the plunger head. This feature I consider of importance as I contemplate using the same pressing mechanism for many cans of ink which may be of different colors or quality and subject to deterioration if contaminated by one another.

As each ink can is provided with its own tight fitting top, a liquid tight joint is insured in spite of any slight variation in the dimensions of the parts which might from time to time arise in their manufacture. The repeated use of the same pressing mechanism on successive vessels makes my apparatus commercially feasible, whereas the provision of a separate plunger for each can might make the price prohibitive.

In case some ink remains in the ink fountain of the press when the printing is finished, it may be returned to the storing vessel in the following manner; the wing nut 34 is turned to lift the auxiliary shaft 22 and thus draw up the conical spreader 19 and force outward the segments 12, 13 and 14 until they engage the can top flange 6 under the annular swage 7; then by turning crank 33 the top 5 may be lifted thus drawing the ink away from the opening 3 and making room for the unused ink. After this, the opening 3 may be closed with the spring cap 4; the plunger disengaged from the top 5 and withdrawn and the ink can 1 with its unused contents, taken out of the jacket and stored away for future use, the ink being completely sealed up and protected.

Figs. 7 and 8 show a more simple form of plunger support and can clamping means which may be used as a substitute for the jacket 26 and its top 24. This modification comprises a skeleton casting 35 comprising an annular base 36 on which the ink can rests, a plurality of ribs 37, and a top 38 which extends outward and is screw threaded to engage with the threaded shaft of the plunger. The crank 33 of Fig. 6 is replaced by a handwheel 39 and the other details are the same as shown in the preceding figures. This modification has the advantage of a cheap and simple construction and affords a quick and easy removal of the ink can.

Figs. 9, 10 and 11 show a modification in which the jacket is dispensed with entirely and in which the plunger is mounted on a support clamped directly to the ink can. To secure a firm seat for this support the can is provided with an annular swage at 40. The clamping support comprises a central tongue 41 in which the plunger shaft 42 is screw threaded, and also two wings 43 and 44 pivoted at 45 and 46 to the central tongue 41 and provided at their outer ends with a locking mechanism consisting of a lug 47 in which is pivotally mounted a flattened key 48 adapted to slip through a slot 49 in the lug 50, and rotatable at the end of the slot to lock the parts together. The wings 43 and 44 are provided with downwardly extending flanges 51 and 52 for engagement with the can top and these flanges have an annular groove for engagement with the swage 40. The tongue 41 is provided with two lugs 53 and 54 which engage with slots 55 and 56 in their respective wings and thereby prevent upward movement of the tongue when the plunger is forced downward. Two similar lugs 57 and 58 prevent downward movement of the tongue. It will thus be seen that the component parts of the plunger support fit neatly together in a workman like manner and give a good firm anchorage to the plunger and yet at the same time are so constructed that by simply turning the key 48 the wings may be swung out of engagement with the can and the whole pressing mechanism removed for application to a second can. The details of the plunger head and other parts of the apparatus are the same as in the other modifications except the segment spring, which in Fig. 10 is shown as consisting of a coiled wire 59.

What I claim as new and desire to secure by Letters Patent of the United States, is:

1. A shipping and storing vessel for printers' ink comprising a can having openings in the top and bottom thereof, a closure for said bottom opening, a flanged closure for said top opening movable into said vessel, and a swage in the flange of said movable closure.

2. A shipping and storing vessel for printers' ink comprising a can having an open top, an adjustable flanged closure for said top, a bottom for said can, a relatively small opening in said bottom, a spring closure therefor and removable caps inclosing the top and bottom of said can to form double seals.

3. The combination of a canister having a relatively small opening in one end thereof, a flanged sheet metal closure for the other end thereof, a screw threaded piston having a piston-head seated on said flanged closure, a support for said piston detachably clamped to the top of said canister, and means for locking said piston head to the flange of said closure.

4. The combination of an ink canister having an opening therein, a screw threaded shaft, a head rotatably mounted on said shaft and substantially filling said opening, a sheet metal sealing top separating said head from the ink, and means for locking said head to said sealing top.

5. The combination of a shipping and storing vessel for plastic ink, an adjustable flanged top therefor, a swage in the flange of said top, and means for pressing said top into said vessel to eject plastic ink through an opening in said vessel.

6. The combination with an ink canister, of a piston

support encircling the top of said canister and detachably clamped thereto, a piston carried by said support and out of contact with said ink, and means for moving said piston to eject ink from said canister.

7. The combination with an ink canister for plastic ink, of a sheet metal sealing top resting on said ink, a piston support detachably secured to said canister, a screw-threaded piston carried by said support, and having a head rotatably mounted thereon, means for locking said piston head to said sealing top, and means for releasing said piston support to permit direct withdrawal of said piston.

8. The combination with an ink canister for plastic ink, of a flanged sealing top contacting with said ink, and a piston for raising and lowering said top, said piston having members movable outward to engage with the flange of said sealing top.

9. The combination with an ink canister, of a flanged sealing top, a piston engaging therewith and movable to eject ink from said canister, said piston having a segmental head, and means for separating the segments of said head.

10. The combination with an ink canister, of a flanged sealing top, a piston therefor movable to eject ink therefrom, said piston having a segmental head and means for spreading the segments to increase the effective diameter of said piston.

11. The combination with an ink vessel, of a sealing top contacting with the ink, a piston support clamped to said vessel, a piston carried by said support, and means for detachably securing said piston to said sealing top.

12. The combination with a storing vessel for printers' ink, of clamping means inclosing the top thereof and having a central tongue, a piston supported by said tongue, a sealing top movable in said vessel, and means for causing said piston to engage with said sealing top.

13. The combination with a storing vessel for plastic ink, of a piston movable into said vessel to eject ink therefrom, means for preventing contact of said piston with said ink, and clamping means supporting said piston and comprising a central tongue and side members clamped to each other.

14. The combination of a storing vessel for printers' ink, of a screw threaded piston movable into said vessel to eject ink therefrom, and a support for said piston clamped about the top of said vessel and permitting the direct withdrawal of said piston from said storing vessel without unscrewing.

15. The combination with an ink vessel, of a sheet metal sealing top contacting with the ink, a piston having members movable outward to engage said top and means operative from outside the ink vessel for locking said piston to said top.

16. The combination with a storing-vessel, of a piston therefor movable therein, said piston having a segmental head, and means operative from outside said vessel for separating the segments of said head.

17. The combination with a storing-vessel for plastic fluids, of a piston for ejecting said fluids having an expansible head, and means operative from outside said vessel for increasing the effective diameter of said piston head.

In witness whereof I have hereunto set my hand this 12th day of March, 1906.

WILLIAM EDWARD RADTKE.

Witnesses:
FRANK J. SNITE,
JAMES J. WAGNER.