C. T. Close,

Inkstand.

No. 13.902. Patented Dec. 11. 1855

fig. 2.

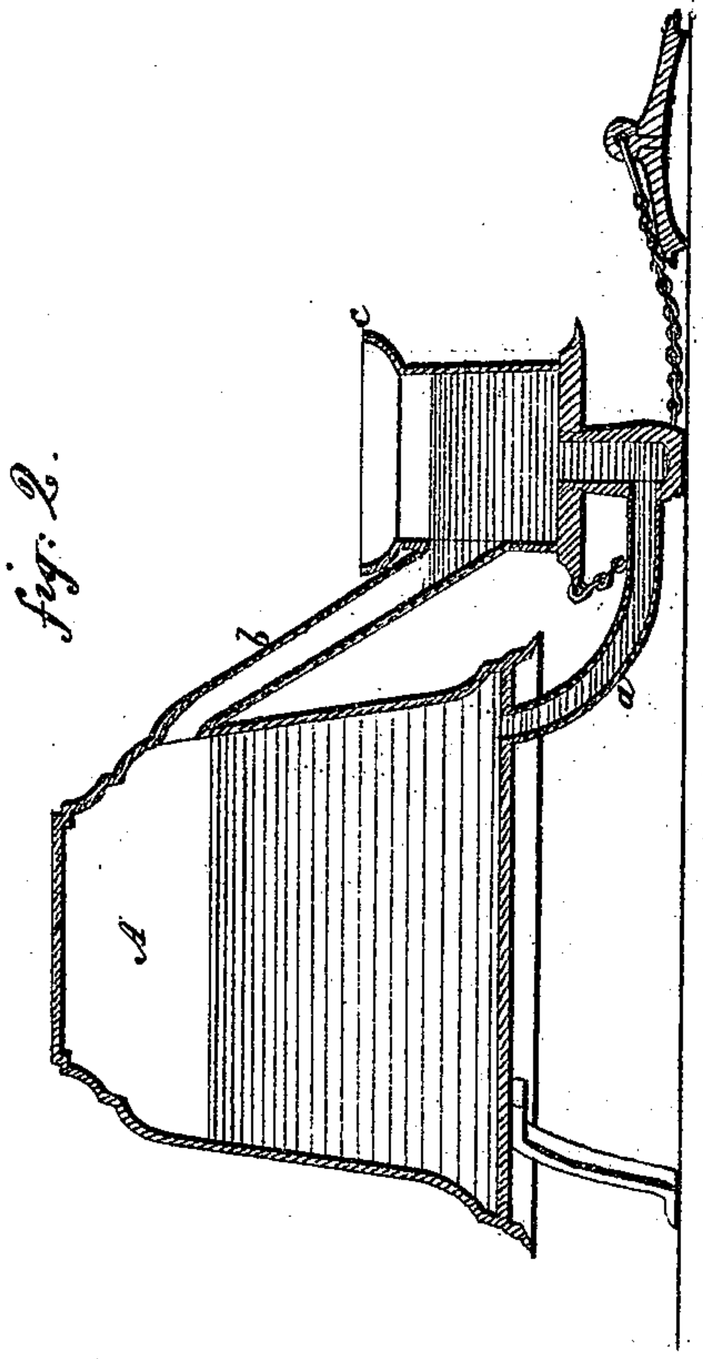
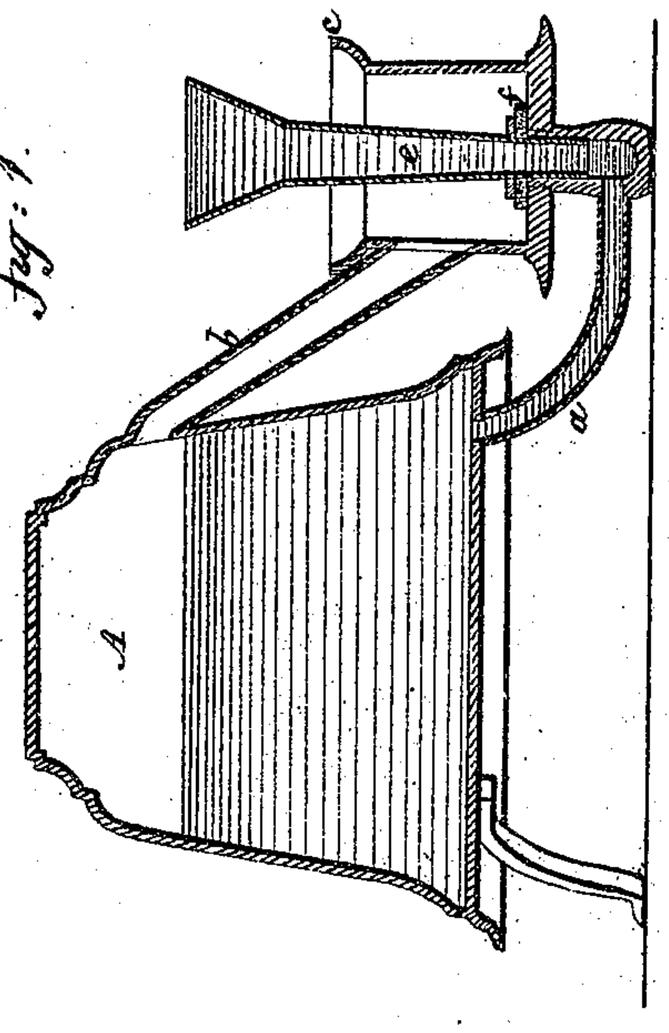


fig. 1.



UNITED STATES PATENT OFFICE.

CHARLES T. CLOSE, OF NEW YORK, N. Y.

FOUNTAIN-INKSTAND.

Specification of Letters Patent No. 13,902, dated December 11, 1855.

To all whom it may concern:

Be it known that I, C. T. CLOSE, of the city, county, and State of New York, have invented a certain new and useful Improvement in Self-Feeding Inkstands, of which the following is a full, clear, and exact description, reference being had to the accompanying drawing, which forms part of this specification, and in which—

Figure 1 represents my improved inkstand in the process of being filled and Fig. 2 the inkstand when filled or ready for use, both figures showing the inkstand in vertical section.

In self-feeding inkstands which consist of a reservoir and pen supplying cup near the bottom connecting with said reservoir by branch tube or passage for the flow of the ink from the reservoir to the cup, much uncertainty of action has prevailed and irregularity in depth of dip, owing to the variable pressure, by consumption, of the column or head of ink in the reservoir supplying the cup and by reason of the too great rarefaction of the air, and changeableness of same, in the space above the ink in the reservoir; while the attempts which have been made to remedy these defects in such inkstands by making the reservoir of circular form and employing a piston operated by screw, with wool, inside, and the many other plans proposed to regulate the feed to the cup, have been objectionable on account of their complication, liability to derangement and departure from the self feeding principle which the first mentioned device embraces but imperfectly so and is necessarily very limited in its operation. My improvement obviates such defects, has no limit of operation as regards the relative heights of the reservoir and cup, and necessarily preserves a fixed regularity of action and depth of dip in the pen cup without liability to fail or changeableness, and this in a simple manner without any loose or working parts.

In the inkstand represented in the accompanying drawing, the reservoir (A) is made close top and bottom and has no opening for admission of air, by leakage of any stopper, plug, cap or when filling, except by a specially arranged tube or passage (*b*) which forms the novel feature of my improvement. This tube or passage (*b*) is arranged to form an angular connection with the partially exhausted air space at or within the top of the reservoir above the ink and the pen cup (*c*) at its top, or at or about the height the ink is desired to stand in said open cup (*c*) which is further connected with the reservoir, at or near the bottoms of the reservoir and cup, by the usual branch connecting tube or passage (*a*).

To fill the inkstand, a filler may be used formed of a pipe (*e*) surrounded near its bottom by a cork or other soft or flexible disk (*f*) of sufficient size to constitute a close cover around the aperture in the bottom of the cup which establishes the ink connection with the reservoir, while the end of the pipe (*e*) of the feeder may project into said aperture and the pipe (*e*) with funnel at its top be made of sufficient height to admit of the ink, when the feeder is placed in the cup as described, being passed into the reservoir to nearly the full height thereof, the air escaping from the reservoir, while the filling is going on, by the upper connecting tube or passage (*b*) which forms an air connection between the top of the reservoir and body of the cup, no ink being in the cup while first filling in the ink if this method of filling and form of filler be adopted, but on removal of the filler the ink rushes into the cup from below and rises therein till it fully or slightly more than fully covers the lower end or bottom opening of the upper connecting tube or passage (*b*) in doing which it shuts off the admission of fresh atmosphere to the interior of the reservoir, and in thus gradually closing the admission while the ink in the reservoir continues to descend to supply the cup, the atmospheric pressure on the ink in the reservoir is necessarily slightly reduced and a sustaining power obtained to keep the ink in the cup at a level slightly over or just covering the bottom opening or end of the upper connecting passage (*b*) which level is continually preserved during the falling of the ink in the reservoir to meet the drain upon it in the cup by the repeated use of the pen, the full atmospheric pressure upon the ink in the cup and the action of or upon the ink in the reservoir serving to establish the specified equilibrium and the pen each time it is inserted, to take a fresh supply from the cup, causing a temporary exposure or uncovering of the lower end of the upper connecting tube or passage (*b*) and slightly agitating the ink in said passage so as to form an air space or channel along the upper edge of said tube or passage (*b*) for a

small quantity of air to pass thereup into the upper vacant space of the reservoir to compensate, by pressure and fresh supply or increase of air, for the reduction in the amount of head and increase of vacant space formed by the falling column in the reservoir, and as long as the column is above the lower end or mouth of the upper connecting tube a quick return or rise of the ink must take place in the cup till the ink covers the mouth of the said upper connecting tube when the further rise of the ink is arrested as before, the ink in the cup by the operation of the pen being caused to form an opening and closing valve to the lower end or mouth of the upper connecting tube (*b*), and this action of the pen, by its insertion in and withdrawal from the ink in the cup, will be readily perceived as causing a much more certain, immediate and less tardy return of the ink to its proper level in the cup than in the arrangements before referred to which have no upper separate air tube (*b*) thus relatively arranged but are dependent upon the action of the one lower branch or passage (*a*) for the renewal of ink to the cup and the passage or working of the air through the body of the ink in the reservoir. There a better action is produced, by the sensitiveness of the ink at the lower end of the upper connecting tube (*b*) to the disturbing action of the pen both by reason of the small quantity of ink in said tube and its immediate connection with the surface of the ink in the cup wherein the pen dips, assisted by the free passage for the ascending air that replenishes the reservoir when the pen in dipping agitates the surface of the ink in the cup and causes the ink, as a valve, to uncover temporarily, the mouth or lower end of the upper connecting tube, and in this connection it may be remarked that it will be well to make this upper connecting tube (*b*) of sufficient size in diameter to overcome objectionable capillary attraction so as to make certain and render quick the operation of the fluid valve which the ink forms at bottom of said tube for establishing a freer and more rapid ingress of air to the reservoir when the pen takes its dip as specified.

Of course any desired form or appearance may be given to the inkstand, fanciful or otherwise, and the passages (*a* and *b*) arranged so as to be concealed from sight or be made to present quite a different aspect, and the same may be said of the cup and reservoir.

The description of self feeding inkstand to which this improvement has reference has been distinctly pointed out and its operation is entirely different from that of another form, usually made of porcelain and somewhat resembling it in appearance inasmuch as there is a reservoir, cup and two connecting tubes or passages, the one however of which has the same objectionable double office to perform which the former ones referred to possess of admitting air to the reservoir and letting down the ink into the cup while the other passage is not the same upper connecting one (*b*) but forms a different connection, branching from the side of the cup, at the desired level, to carry surplus ink into an overflow chamber arranged within or at the bottom of the reservoir, which complicity of compartments and operation are in many respects highly objectionable. In this latter description of inkstand, the reservoir is filled from below by taking out a screw plug or stopper, which method, if liability to leakage can be overcome, might be adopted as a mode of filling the improved inkstand here described.

What I claim as a new and useful improvement on the description of self feeding inkstand here referred to, and desire to secure by Letters Patent, is—

The arrangement and combination substantially as specified of the upper tube or passage (*b*) connecting the top or air space of the reservoir with the pen cup at or immediately below the level the ink is designed to stand in said cup, the latter being connected with the reservoir in manner shown or equivalently thereto and the ink in the pen cup forming a fluid valve that, upon the insertion of the pen and withdrawal thereof, alternately opens and closes the lower end of the upper connecting tube for the free, rapid and certain admission of fresh air at intervals to the reservoir as required.

In testimony whereof, I have hereunto subscribed my name.

CHAS. T. CLOSE.

Witnesses:
S. A. CASTLE,
H. S. MAGRANE.