S. Darling.
Inkstand.

No. 21,554. Patented Sept. 21, 1858.

Fig. 1

Fig. 2

Fig. 3.

Fig. 4.

Fig. 5

Fig. 6.

Fig. 7.

UNITED STATES PATENT OFFICE.

SAMUEL DARLING, OF BANGOR, MAINE.

IMPROVEMENT IN INKSTANDS.

Specification forming part of Letters Patent No. **21,554**, dated September 21, 1858.

To all whom it may concern:

Be it known that I, SAMUEL DARLING, of Bangor, in the county of Penobscot and State of Maine, have invented certain new and useful Improvements in Inkstands, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 represents a perspective view of an inkstand embracing my improvement. Fig. 2 represents a vertical longitudinal section through the middle of the same. Fig. 3 represents a perspective view of the inkstand with its top removed. Fig. 4 represents a view of the under side of the top of the inkstand. Figs. 5 and 6 represent modifications of the form of the mouth of the dipping-cup, and Fig. 7 represents a section similar to that shown in Fig. 2 when the inkstand is inclined to fill the dipping-cup.

It is well known that good writing-ink, being usually made with the salts of iron, is seriously deteriorated by exposure to the air. This detriment results from various causes. Good ink when first made contains nearly all of its iron in a soluble form, and although it makes but a pale mark while writing it gradually becomes dark on exposure, owing to the formation of a black insoluble compound by its absorption of oxygen. The iron having been carried into the pores of the paper in a soluble condition and having there become insoluble, the marks become of a permanent black; but in writing with ink which from exposure to the air has already undergone this change from a soluble to an insoluble condition, the insoluble matter being already formed, is merely deposited upon the paper, and the marks made with it, although black from the first, are more readily effaced. The original uniform consistency of the fluid also being altered by this change, it unfavorably affects the appearance of the writing. Thus the same ink during continued exposure to the air will produce writing of gradually-decreasing permanence and constantly-varying appearance, the latter being in some cases the greater of the two evils. In addition to these difficulties, when ink is exposed to the air the insoluble matter gradually deposits as a sediment, which, when reached by the pen, clogs it and impedes its use, while the ink is still further thickened by evaporation and by dust falling upon the surface. All changes which detract from the fluidity of the ink or from the uniform appearance of the marks made with it essentially impair the facilities for writing, either directly, by making the ink flow less freely from the pen, or indirectly, by diverting the attention of the writer from his work to his materials, a serious hinderance to his progress.

The deleterious effects of all of these causes combined upon the quality of writing-inks has led to the great number of improved inkstands which have been devised, and many of which have a pen-cup or dipping-cup supplied from a reservoir in the inkstand, but which so far have only imperfectly attained their object. In most cases the ink in the cup is, whether desired or not, in constant communication to a greater or less extent with the ink in the reservoir, and hence the latter gradually becomes changed in the same manner as if it were directly exposed to the air. In other instances the ink is presented for use in a dipping-cup supported at a level in which it is balanced between the pressure of the atmosphere and that of an included and confined portion of air, which, varying in bulk with changes of temperature or barometric pressure, sometimes causes the ink to overflow the cup or else to retreat within the reservoir and contaminate the ink therein contained in the manner before described.

In another class of inkstands the top is made to undergo a partial rotation to present the ink for use in a cup or cavity; but aside from the disadvantages already named such stands are more liable to get out of order than those which are differently constructed.

My improved inkstand differs from all these and from all others hitherto devised, in having a pen-cup or dipping-cup the ink in which cannot be made to communicate with the ink in the reservoir while the stand is in its proper position, and yet being so constructed that the ink can readily be supplied to the cup when necessary.

The stand, or at least those portions of it with which the fluid comes in contact, may be made of any suitable material which does not have an injurious effect upon inks. One of the cheapest and best substances is earth-

enware or porcelain, and when these are used the bottom part (shown in Fig. 3) and the top part (shown in Fig. 4) may be molded separately and cemented together before burning.

A cavity R in the inkstand forms the ink-reservoir, which is provided with openings presently to be described, for the entrance of the air and the exit of the ink when the dipping-cup is to be supplied. On one side of the reservoir is the pen-cup or dipping-cup C of a conical form and provided at the bottom with a depression *d*, so shaped that when an ordinary pen is dipped into the cup the tip of it will not strike upon the bottom of the cup, the pen being supported at the shoulder of its nib by the mouth of this depression. A passage or canal P furnishes a communication between the top of the reservoir and the cup. The mouth of this canal opens into the upper part of the cup C, and below this mouth there is a score *s* in the side of the cup for the guidance of the ink when it is turned back into the reservoir.

The canal P is closed by a somewhat conical stopper or cork S, having openings *a p* in it, so arranged that when the stopper is properly turned one *p* of the openings forms a channel between the reservoir R and the canal P for the passage of the ink from the former through the latter into the cup C, while the other opening, *a*, opens into an air-hole *h* in the top of the stand, so that air may enter as the ink goes out. When the stopper is turned into any other position than that just described, the openings in it and those in the stand do not correspond and the ink in the reservoir is completely cut off from contact with the external air.

The bottom I of the reservoir R inclines upward from the opposite end toward the canal P, so that when the stand is tipped to supply the dipping-cup the least quantity of ink remaining in the reservoir may be turned into the cup with but a moderate inclination of the stand. The angle of the inclined bottom must vary with the shape and dimensions of the cup, but should be relatively such that when horizontal the cup will hold a sufficient charge of ink.

The stand is supplied with ink in the following manner: The stopper S is taken out and ink poured in through the aperture left by its removal until the reservoir is nearly full. The stopper is then replaced and turned so as to open the channel between the cup and the reservoir, as before described, when the stand is inclined and the ink flows into the cup, while the air enters in at the top of the reservoir to take its place. When the ink reaches the brim of the cup, the stand is set down and the stopper turned.

From this description it is evident that when the inkstand is placed in its ordinary position when in use there can be no communication between the ink in the reservoir and that in the cup, although the stopper be turned, so as to bring the passages in connection, and the openings being comparatively small, even in this case, the access of air to the ink in the reservoir would not produce any sensible effect upon it. It is also evident that any want of accuracy in the fitting of the cork or stopper would not in its usual position occasion serious inconvenience, such as would result if it had upon it the pressure of even a small column of fluid. For this reason the stopper, as well as the stand, may be made of earthenware; but to give it a better hold in its seat and to prevent it from being easily thrown out it may be made of some elastic material, such as vulcanized india-rubber. This mode of construction affords another advantage not attained in the ordinary inkstands. Persons who write a great deal or who are very particular about their writing not only fill the pen-cup frequently with fresh ink, (once or twice a day,) but wash it out each time before refilling it, in order to remove the least sediment which may have been deposited. By my mode of construction the cup may readily be washed out without any difficulty and without interfering with the ink in the reservoir.

When economy of ink is desired, as when writing has to be done only at long intervals, my inkstand allows the ink in the cup to be returned to the reservoir. This is done by turning the stopper as if about to fill the cup and inclining the stand in a direction the reverse of that assumed in filling it. The ink from the cup will then flow back through the canal into the reservoir, and the sediment, if any, will be left in the bottom of the cup; but unless there has been only a short time for the action of the air this return of the ink is not advisable, for the reasons before mentioned.

The peculiarities of my improved inkstand having been thus shown, it is evident that various modifications may be made in it without affecting the nature of my invention. Thus the form and proportions of the stand may be varied at the dictation of taste or utility; but one of the most important modifications—that which depends upon the quantity of ink supplied to the cup—I propose to illustrate.

It is plain that when the stand is tipped for any great inclination a greater quantity of ink will be supplied to the cup if the lower side of the brim (the side farthest from the reservoir) should be raised, because more ink might then flow in, there would be sufficient to overflow the brim if it were left level, and when the stand is returned to its horizontal position the level in the cup would be higher than could be obtained without such elevation of the brim. This may be accomplished by an addition to the mouth of the cup, which, at most, should not be more than the fourth of a sphere, as shown in Fig. 1 or in section in red in Fig. 7. In such cases the inclined bottom may be dispensed with if increased capacity of the reservoir be desired, as the

last of the ink remaining in the reservoir might be turned into the cup without difficulty.

In some cases, as in inkstands for schools, the mouth may be contracted above the cup, as shown in Fig. 5, which contraction affords the further facility of shutting out even the small portion of ink in the cup from the air by a cork or other stopper C′, and in this case, too, the inclined bottom may be dispensed with. This modification also has another advantage, namely, that when the stand is tipped to supply the cup, the cork being in its place, the ink will not be spilled even if by accident or carlessness the bottom is brought into a vertical position. In any of these forms the bottom need not be inclined if it is not deemed necessary to use up all the ink in the reservoir before replenishing it. It is far better, however, that all or nearly all of the ink should be used before the stand is again filled, and on this account I prefer the bottom inclined, as has been described.

What I claim as my invention, and desire to secure by Letters Patent, is—

An inkstand with a dipping-cup and reservoir, arranged and constructed substantially as above described.

In testimony whereof I have hereunto subscribed my name.

SAMUEL DARLING.

Witnesses:

ALBERT W. PAINE,

A. W. BABCOCK.