

(No Model.)

H. S. HELE-SHAW.
INKSTAND.

No. 503,852.

Patented Aug. 22, 1893.

FIG. I

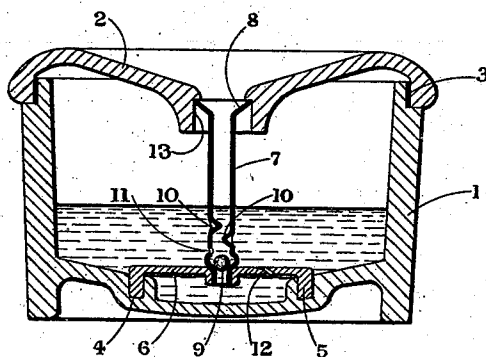


FIG. II

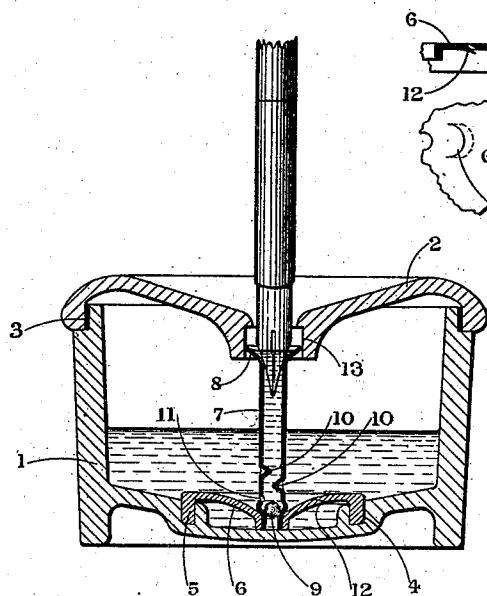


FIG. III

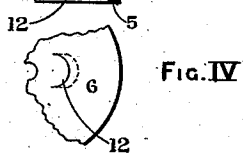


FIG. IV

Attest
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UNITED STATES PATENT OFFICE.

HENRY S. HELE-SHAW, OF LIVERPOOL, ENGLAND.

INKSTAND.

SPECIFICATION forming part of Letters Patent No. 503,852, dated August 22, 1893.

Application filed March 26, 1893. Serial No. 467,560. (No model.)

To all whom it may concern:

Be it known that I, HENRY SELBY HELE-SHAW, professor of engineering, a subject of the Queen of Great Britain, residing at University College, Liverpool, in the county of Lancaster, England, have invented certain new and useful Improvements in Inkstands, of which the following is a specification.

This invention relates to inkstands in which there is a dipping cup into which the pen is dipped, and into which, by the act of dipping, a quantity of ink is forced from the supply of ink in the inkstand. In devices of this kind, as hitherto constructed, various difficulties have been experienced due to variations of temperature and atmospheric pressure and also due to spurting and to the fact that the ink as it recedes from the dipping cup is very apt to withdraw the ink from the pen, leaving the latter insufficiently charged; and the object of my invention is to overcome these difficulties and to simplify and cheapen the construction of inkstands.

In the accompanying drawings, Figure I is a sectional elevation of the inkstand ready for use. Fig. II is a similar view, showing the pen in position and the dipping cup depressed, and Figs. III and IV show details.

1 is the containing vessel which is usually made of glass and which is fitted with a cover 2 also usually made of glass, the joint between the cover and container being made with a ring 3 of india-rubber; at the bottom of the container an annular groove 4 is formed in which the depending flange 5 of an elastic diaphragm 6 fits. The diaphragm is made preferably of india-rubber and has a central flanged opening which is adapted to fit over the lower end of the tube 7. The tube 7 is cone-shaped at the top and forms a dipping cup 8 which is guided in the recess 13 formed in the cover. The diameter of the tube 7 is reduced at its lower end so as to form a seating for the small ball 9 and the passage of the tube is constricted above the ball by the internal projections 10 which serve to moderate the flow of the ink and to prevent the ball 9 rising too high in the tube; a small

hole 11 is also provided in the tube above the ball. The tube is preferably made of glass. The flexible diaphragm is provided with a non-return valve 12 which may be conveniently made by cutting the rubber as shown in Figs. III and IV.

The action is as follows:—When the pen 14 is dipped into the dipping cup 8 it depresses the tube 7 and with it the central portion of the flexible diaphragm, with the result that the ink below the diaphragm is expelled, the greater quantity being forced up the tube 7 into the dipping cup 8 and some escaping through the hole 11 and valve 12; on the pen being lifted the diaphragm resumes its normal position but the ball 9 forms a valve which prevents the sudden withdrawal of the ink from the dipping cup as this would leave the pen insufficiently charged. The ink drains away slowly through the hole 11, and a fresh quantity of ink finds its way below the diaphragm through the valve 12 as the diaphragm resumes its normal position.

It will be seen that, in the construction described, a uniform dip is insured, the pen left properly charged, the tendency to spurt is checked and the action is independent of temperature and atmospheric variations. The construction is also considerably cheapened and simplified.

In place of a valve 12 a hole smaller in diameter than the bore of the tube 7 below the ball valve 9, may be substituted.

Having fully described my invention, what I desire to claim and secure by Letters Patent is—

1. In combination with an ink container 1, a flexible diaphragm 6 provided with a non-return valve 12 and having a periphery adapted to fit against the inner surface of the container and to inclose a portion of the ink therein below its surface; a tube 7 having a hole 11 through the side thereof, the upper end of the tube forming a dipping cup 8 and the lower end having its bore constricted and being adapted to fit an opening in the center of the diaphragm, and a ball valve 9 which normally closes the bore of the tube against

the downward flow of the ink substantially as described and illustrated.

2. In combination with an ink-container and tube 7, a flexible diaphragm 6 having a
5 non-return valve 12 and a depending peripheral flange adapted to fit in an annular groove formed in the bottom of the container substantially as described and illustrated.

In testimony whereof I have hereunto set

my hand in the presence of two subscribing witnesses.

H. S. HELE-SHAW.

Witnesses:

CHARLES COLLINS,
Notary Public, Liverpool.

J. E. LLOYD BARNES,
Patent Agent, Liverpool.