

H. T. EMEIS.
PNEUMATIC ATTACHMENT FOR INK RECEPTACLES.
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1,075,469.

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Fig. 1.

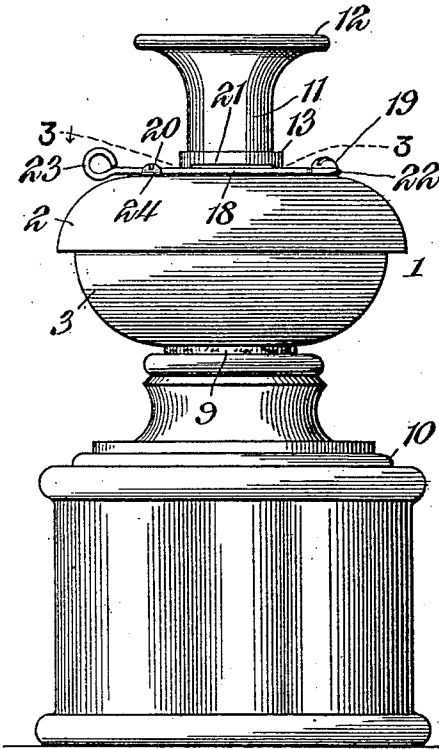


Fig. 2.

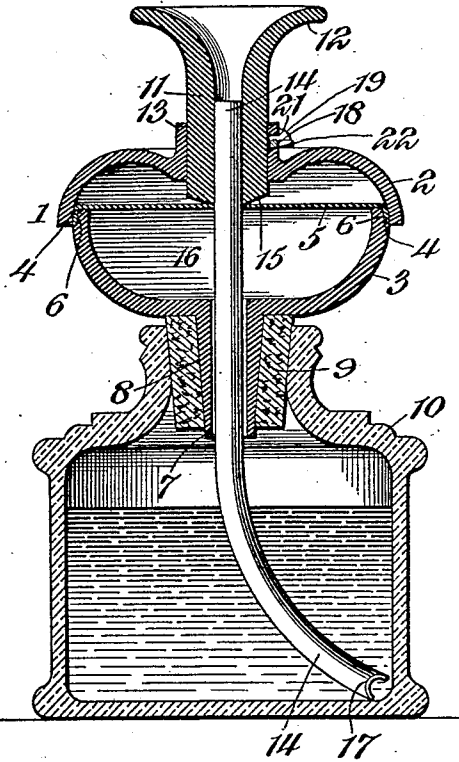


Fig. 3.

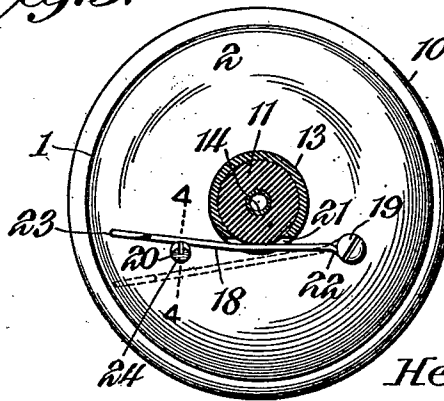
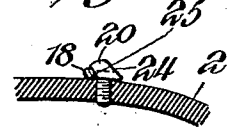


Fig. 4.



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PNEUMATIC ATTACHMENT FOR INK-RECEPTACLES.

1,075,469.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, HENRY T. EMEIS, a citizen of the United States, residing at San Diego, in the county of San Diego and State of California, have invented a new and useful Pneumatic Attachment for Ink-Receptacles, of which the following is a specification.

The invention relates to a pneumatic attachment for ink receptacles.

The object of the present invention is to provide a simple, efficient and inexpensive pneumatic attachment, adapted to be readily applied to ink wells and to ink bottles for converting the same into automatic pneumatic ink wells, and capable of being readily transferred from one ink bottle to another, and of also affording simple and easy means for refilling ink wells.

A further object of the invention is to provide a pneumatic attachment of this character having a depressible ink cup, and equipped with means adapted, after the cup is depressed and filled with ink, to lock the cup in such position to prevent the ink from flowing back into the ink bottle or other receptacle to which the device is applied.

With these and other objects in view, the invention consists in the construction and novel combination of parts hereinafter fully described, illustrated in the accompanying drawing, and pointed out in the claims here-to appended; it being understood that various changes in the form, proportion, size and minor details of construction, within the scope of the claims, may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

In the drawing: Figure 1 is a side elevation of a pneumatic attachment, constructed in accordance with this invention and shown applied to an ink bottle. Fig. 2 is a central vertical sectional view of the same. Fig. 3 is a horizontal sectional view on the line 3—3 of Fig. 1. Fig. 4 is a detail sectional view on the line 4—4 of Fig. 3.

Like numerals of reference designate corresponding parts in all the figures of the drawing.

In the accompanying drawing in which is illustrated the preferred embodiment of the invention, 1 designates a circular sectional casing, designed to be constructed of hard rubber, or any other suitable material and divided horizontally to form upper and

lower sections 2 and 3, having their peripheral edges fitted together and overlapped and securing between them the marginal portion 4 of a horizontal flexible diaphragm 5 consisting of a sheet of rubber, or other suitable material. The exterior of the lower section 3, which is dish-shaped, as clearly shown in Fig. 2, is preferably provided with a peripheral recess 6 to receive the marginal attached portion of the elastic diaphragm 5, which is securely and detachably held between the upper and lower sections of the casing. The detachable connection between the upper and lower sections of the casing enables the elastic diaphragm to be removed and renewed when desired.

The lower section is provided with a central opening, and it has an integral depending tapering tube 7, adapted to fit in an opening 8 of a stopper 9 of an ink bottle 10, or in an opening of any other suitable closure of either an ink bottle or ink well, and it enables the pneumatic attachment to be readily transferred from one ink bottle to another, it being only necessary to remove the device and the apertured stopper 9 from an empty ink bottle and place the said stopper in the neck of a full bottle, the apertured stopper with the device thereon being substituted for the stopper of the full bottle. The tapered tube 7 enables it to fit tightly within the opening of the stopper 9, which fits against the bottom of the lower section of the casing.

The upper section 2, which is dished, is slightly depressed at the center and is provided thereat with an opening to receive a shank 11 of a cup 12, and is provided with an upwardly extending annular flange 13, which surrounds the shank 11 of the cup 12. The cup 12, which is also designed to be constructed of hard rubber, or other suitable material, is tapered or funnel-shaped, and its shank 11 is tubular and receives within its bore the upper end of a flexible tube 14, extending downwardly through the center of the diaphragm 5 and through the tapered tube 7 to the bottom of the ink receptacle 10. The lower end 15 of the tubular shank is tapered and is seated upon the diaphragm and assists in hermetically sealing the chamber 16, formed by the said diaphragm and the lower section of the casing. The lower end 17 of the flexible tube 14 is cut away at opposite sides to prevent it from being closed through contact with the bottom or

walls of the ink receptacle, and when the cup 12 is depressed the diaphragm is forced downwardly, thereby compressing the air within the chamber and creating a pressure
 5 on the liquid contained within the receptacle 10 and forcing the ink upward through the flexible tube 14 into the depressible cup 12. The cup is adapted to be locked in such depressed position by the means hereinafter
 10 described, so as to prevent the ink contained within the cup from flowing back into the ink bottle 10. When the ink is consumed, the cup is released and is raised through the elasticity of the diaphragm, which thereby
 15 creates a partial vacuum within the chamber 16 and causing air from the exterior to flow through the ink into the said chamber. The cup is then adapted to be depressed for again filling the same.

20 The locking device consists of a resilient locking member 18, constructed of spring wire, or other suitable material and secured at one end to the upper face of the top section by a screw 19, or other suitable fasten-
 25 ing device and having its other end free and detachably engaged with a lug or projection 20 of the said upper section 2. The intermediate portion of the resilient locking member operates in a horizontal slot 21 in
 30 the vertical annular flange 13 of the upper section. When the locking member 18 is engaged with the lug or projection 20, it is flexed and frictionally engages the tubular shank 11 of the cup 12, and holds the same
 35 against vertical movement in the upper section of the casing. The lug or projection 20 has a beveled front or outer face 24 to enable the resilient locking member to readily ride over it, and its inner face 25 is recessed or
 40 undercut to receive the resilient locking member and it forms a shoulder for engaging the same to retain the resilient locking member in its engaging position. The attached end of the locking member 18 is provided with an eye 22 to receive the screw 19,
 45 and the wire is preferably bent into an eye 23 at the free end of the locking member to provide a grip or handle to enable the locking member to be readily grasped to engage
 50 it with and disengage it from the lug or projection. The lug or projection 20 preferably consists of the head of a screw, as illustrated in the accompanying drawing, but it may be formed in any other desired manner.

55 When the device is applied to an ink well, the latter, when empty, may be readily refilled by withdrawing the tapered tube of the lower section of the casing from the closure of the ink well or stand, and the device
 60 may then be used as an ordinary funnel and ink poured into the tapered or funnel-shaped cup will flow through the flexible rubber tube into the ink well or stand. After the ink well or stand has been refilled,
 65 the tapered tube of the lower section of the

casing is replaced in the opening of the closure and the device is ready for use.

What is claimed is:—

1. A pneumatic attachment for ink receptacles including a casing provided with a depending tube adapted to be inserted in the opening of a stopper or other closure, an elastic diaphragm arranged within and extending across the casing, a depressible cup having a tubular shank slidable through the upper portion of the casing and supported by the elastic diaphragm, and a flexible tube passing through the diaphragm and the depending tube of the casing and having its upper end extending into the tubular shank of the cup, said flexible tube being of a length to extend to the bottom of the ink receptacle.

2. A pneumatic attachment for ink receptacles including a casing divided horizontally at an intermediate point between its top and bottom to form upper and lower sections, which are connected together at their edges, the lower section being provided with means for connecting it with an ink receptacle, a substantially horizontal diaphragm consisting of a sheet of material extending across the casing and having its marginal edges held between the connected edges of the upper and lower sections, a cup having a shank slidable through the upper section of the casing and located above and supported by the diaphragm, and a tube connected with the shank of the cup and passing through the diaphragm and the lower section of the casing and adapted to extend into the ink receptacle.

3. A pneumatic attachment for ink receptacles including a casing divided horizontally at an intermediate point between its top and bottom to form upper and lower sections having their peripheral edges fitted together, the lower section being provided with a depending tube to fit an apertured stopper or other closure, and the upper section being provided with an opening, an elastic diaphragm consisting of a sheet of material stretched across the casing and secured between the connected edges of the upper and lower sections, a cup having a tubular shank slidable through the opening of the upper section of the casing and supported by the elastic diaphragm an inflexible tube connected with the tubular shank of the cup and passing through the diaphragm and through the tube of the casing and adapted to project into an ink receptacle.

4. A pneumatic attachment for ink receptacles including a casing, an elastic diaphragm therein, a depressible cup slidable in the casing and supported by the diaphragm, a tube connected with the cup and adapted to extend into an ink receptacle, and means for retaining the cup in a depressed position for maintaining ink in the said cup.

5 5. A pneumatic attachment for ink receptacles including a casing, an elastic diaphragm therein, a tube, a depressible cup supported by the diaphragm and connected
10 with the tube, and a locking device carried by the casing and arranged to hold the cup in a depressed position for maintaining ink in the said cup.

10 6. A pneumatic attachment for ink receptacles including a casing having an opening and provided with a projecting flange, said flange being provided with a slot, a diaphragm extending across the casing, a cup having a shank slidable within the
15 flange of the casing and supported by the diaphragm, a tube connected with the shank of the cup and adapted to extend into an ink receptacle, a resilient locking member secured at one end to the casing at one side of
20 the said slot and adapted to operate in the latter to frictionally engage the shank of the cup, and a projection carried by the casing and arranged to be engaged by the free end of the resilient locking member for
25 maintaining the same in its engaging position.

7. In a pneumatic attachment for ink receptacles, the combination with a receptacle having a stopper provided with an opening, of a hollow casing divided horizontally into 30 upper and lower sections, the lower section being provided with a depending tube fitted in the opening of the stopper, an elastic diaphragm consisting of a sheet of material extending across the top of the lower section 35 and confined at its marginal edges thereto, a depressible cup having a tubular shank located above and supported by the diaphragm, the latter being covered by the upper section of the casing, and a flexible tube 40 connected with the cup and passing through the diaphragm and through the said depending tube and extending down into the ink receptacle.

In testimony, that I claim the foregoing as 45 my own, I have hereto affixed my signature in the presence of two witnesses.

HENRY T. EMEIS.

Witnesses:

GEORGE F. ROGERS,
DANIEL E. RILEY.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."