March 9, 1965 G. M. VOSBURG 3,172,356

STENCIL PAD HAND STAMP WITH INK BOTTLE HANDLE

Filed Feb. 12, 1962 2 Sheets-Sheet 1

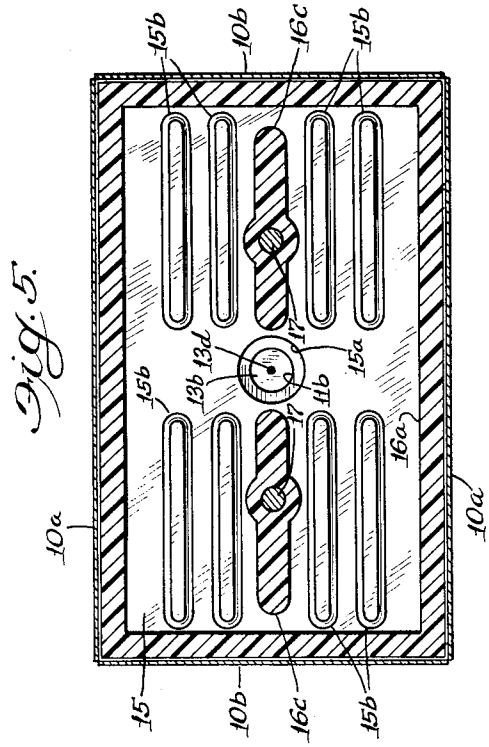

Fig. 5.

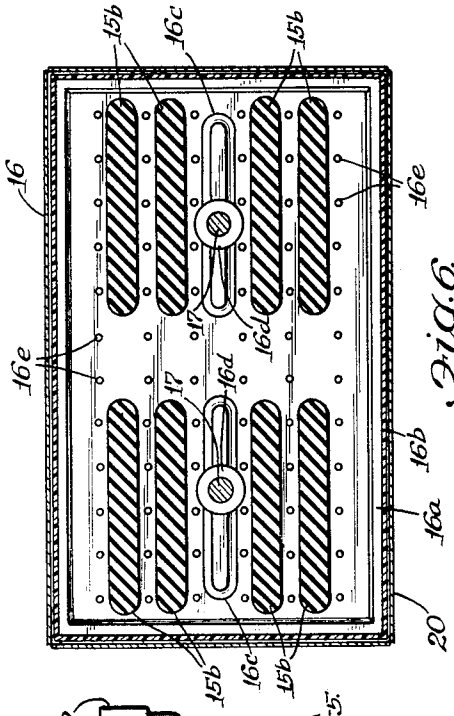

Fig. 6.

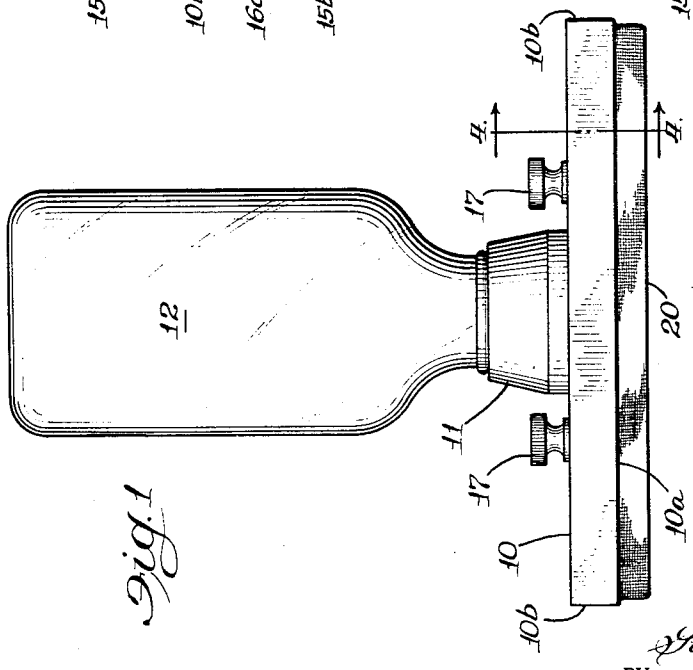

Fig. 1

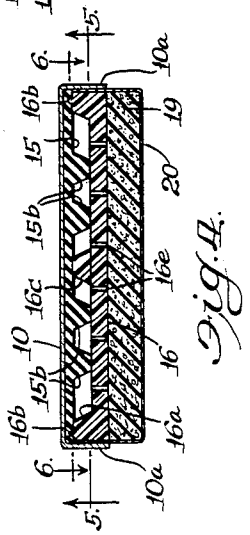

Fig. 4.

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STENCIL PAD HAND STAMP WITH INK BOTTLE HANDLE

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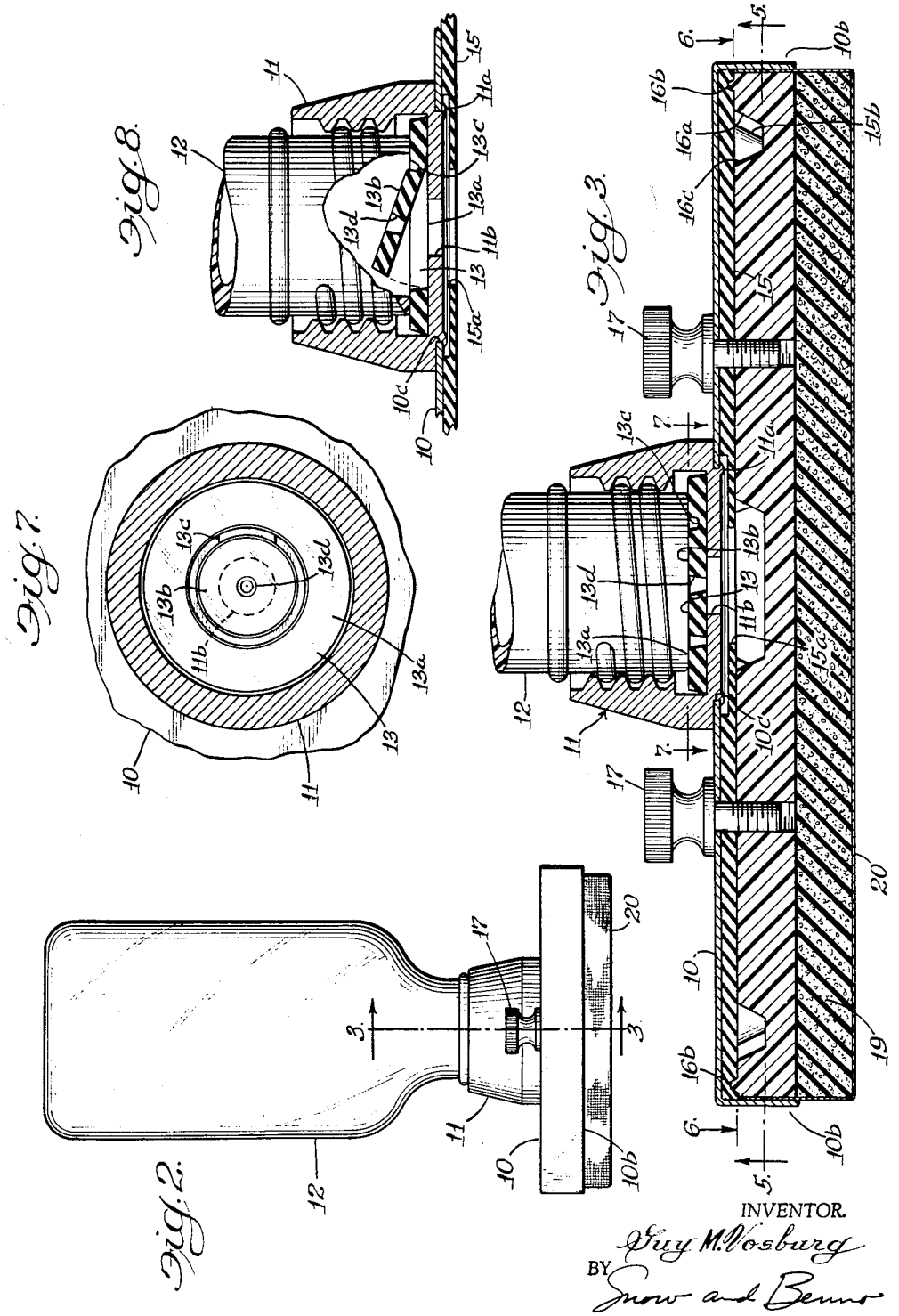

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STENCIL PAD HAND STAMP WITH INK BOTTLE HANDLE

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12 Claims. (Cl. 101—125)

This invention relates generally to hand stamps, and more particularly to hand stamps having ink-replenishing means for the stamp carried in the handle of the stamp.

The primary object of the present invention is to provide a novel construction for a hand stamp or hand printer of the type carrying ink-replenishing means in the handle of the stamp, and further of the type which will print over a certain area through a stencil and which is simple in construction and efficient in operation.

It is a further object to provide novel means in a hand stamp of the foregoing paragraph for uniformly distributing a printing ink from a centrally supplied reservoir in the hand stamp over the entire printing area of the hand stamp.

It is another object to provide a novel reservoir construction in a hand stamp of the foregoing paragraphs which is easily assembled and disassembled and which in the assembled state provides certain passageways for substantially uniformly distributing ink over the entire printing area of the stamp.

It is a further object to provide a novel separator or weir construction cooperating with a reservoir arrangement of the preceding paragraph which will permit the hand stamp to be placed at rest in a tipped position along one longitudinal edge with a minimum possibility of any substantial accumulation of ink in the lower portion of the tipped hand stamp.

It is still another object to provide a novel valve construction in a hand stamp of the type having a handle comprising a compressible container or bottle for sealing the bottle opening in the hand stamp and for providing an ink passageway for delivering a metered amount of ink to the hand stamp.

It is still another object to provide a novel valve construction in a hand stamp of the preceding paragraphs which will permit a substantially larger amount of air to enter the compressible bottle handle when the bottle is released than the amount of ink which is deliverable through the valve to the hand stamp.

Other objects and features of the invention will be apparent upon a perusal of the following specification and drawings, in which:

FIGURE 1 is a side elevational view of a hand stamp constructed according to the invention;

FIGURE 2 is an end elevational view of the structure shown in FIGURE 1;

FIGURE 3 is an enlarged partial view of the structure shown in FIGURES 1 and 2 taken substantially along the line 3—3 of FIGURE 2;

FIGURE 4 is a cross sectional view of the structure shown in FIGURES 1 and 2 taken substantially along the line 4—4 of FIGURE 1;

FIGURE 5 is a cross sectional view of the structure shown in FIGURES 1 and 2 and taken substantially along the line 5—5 of FIGURE 3 or 4;

FIGURE 6 is a further cross sectional view of the structure shown in FIGURES 1 and 2 and taken substantially along the line 6—6 of FIGURE 3 or 4;

FIGURE 7 is a cross sectional view of a portion of the structure shown in enlarged detail in FIGURE 3 and taken substantially along the line 7—7 of FIGURE 3; and

FIGURE 8 is a partial view of a portion of the structure shown in FIGURE 3 but showing the valve in the operated position which permits rapid entrance of air into the compressible bottle.

The present embodiment is the preferred embodiment, but it is to be understood that changes can be made in the present embodiment by one skilled in the art without departing from the spirit and scope of the present invention.

Generally, the present invention comprises a shallow frame member having a central opening over which a bottle adapter is secured. The bottle adapter carries a unique bottle-sealing and valve arrangement, and a compressible ink bottle handle is threaded into the bottle adapter in cooperation with the bottle-sealing and valve arrangement. An elastomer separator or weir is secured by an adhesive to the underside of the frame. The separator or weir comprises a plurality of ribs partially forming a plurality of passageways. A reservoir plate of a rigid plastic material is positioned against the separator or weir and is secured in that position by a pair of thumbscrews which are journaled through the frame and threaded into the reservoir plate. The reservoir plate comprises a pair of centrally disposed ribs and a peripheral continuous shoulder on the upper side thereof. The shoulder in cooperation with the elastomer weir provides a substantially sealed reservoir chamber which is divided into a plurality of ink-conducting passageways by the ribs. The reservoir plate is further provided with a grid of holes formed therethrough at positions between the ribs of the elastomer weir and the ribs of the reservoir plate. The grid of holes permits ink to flow from the reservoir downwardly therethrough to the underside of the reservoir plate. A pad formed of a resilient foamed plastic is positioned against the underside of the reservoir plate and is held in cooperation therewith by a certain cloth material which encloses the pad and is secured to the side walls of the reservoir plate by an adhesive.

The invention is operated by pressing the cloth-covered pad either with a stencil thereon or through a separate stencil to some object upon which the legend of the stencil is desired to be printed. When the ink within the cloth-covered pad and the reservoir is substantially depleted, the reservoir and cloth-covered pad are replenished with ink by compressing the plastic bottle forming the handle of the hand stamp. Ink is then forced through a small opening or orifice in the valve, through the hole in the frame and a central hole in the weir, and into the reservoir. The ink is uniformly distributed throughout the entire area of the reservoir by the described ribs of the elastomer weir and the reservoir plate. From the upper side of the reservoir plate, the ink will pass through the grid of holes in the reservoir plate and thence into the cloth-covered pad. When sufficient ink has been forced from the bottle into the cloth-covered pad to replenish the cloth-covered pad for further printing, the pressure on the plastic bottle is released to permit the compressible bottle to regain its natural shape.

If the bottle is released when the hand stamp is positioned with the bottle above the frame, air will pass through the cloth-covered pad, the grid of holes in the reservoir plate, through the holes in the elastomer weir and the frame to lift a section of the valve which carries the ink feed orifice and into the bottle. The action of the valve upon the release of the bottle permits a rapid return of the bottle to its natural shape.

If an excessive amount of ink has been permitted to flow into the cloth-covered pad, the excess may be drawn into the bottle by positioning the hand stamp with the bottle below the frame, and by then compressing and releasing the bottle to draw the excess ink into the bottle.

The valve member cooperates with the bottle and the frame to provide metered ink flow from the bottle through

the frame and a substantially larger air flow through the frame into the bottle. In addition the valve member provides an ink seal between the bottle and the bottle adapter. When the cloth-covered pad is in a downward position, the weight of the ink in the bottle will maintain the large volume valve section of the valve in the closed position. A partial vacuum in the bottle above the ink and the viscosity of the ink will substantially completely restrict any ink flow through the orifice of the valve. Because of the passageways formed by the ribs of the elastomer weir and the reservoir plate, the hand stamp may be set on one longitudinal edge so that the axes of the ribs are disposed substantially horizontally, without accumulating any substantial amount of ink in the lowest portion of the frame. Instead of flowing downwardly to the lower portion of the frame, the ink will flow from the passageways through the holes of the grid of holes in the various passageways, and from the grid of holes into the cloth-covered pad.

In detail, the present invention comprises a frame **10** having downwardly turned side walls **10***a* and end walls **10***b*. The frame **10** may be formed of a material such as stainless steel. The central portion of the frame **10**, as may be seen in FIGURE 3, is provided with an opening **10***c* over which a bottle adapter **11** is secured. The bottle adapter **11** is positioned over the hole **10***c* in the frame **10** and is secured to the frame **10** by a shoulder **11***a* which is turned over on the underside of the frame **10**. The bottle adapter **11** comprises a recess which is threaded to receive the open end of the bottle **12**. The bottom of the recess in the bottle adapter **11** is provided with an opening **11***b*. The bottle adapter **11** may be cast from a material such as aluminum.

The valve member **13** which is shown in a top plan view in FIGURE 7 comprises an outer ring portion **13***a* and a concentric inner ring portion **13***b* interconnected by a hinge portion **13***c*. The valve member **13** may be formed of an elastomer material such as rubber. The valve member **13** is positioned in the bottom of the recess in the bottle adapter **11**. The outer ring portion **13***a* of the valve member **13** has an outer diameter slightly less than the diameter of the recess in the bottle adapter **11** and greater than the outer diameter of the open end of the bottle **12**. The inner diameter of the portion **13***a* of the valve member **13** is smaller than the inner diameter of the open end of the bottle **12** and greater than the diameter of the opening **11***b* in the bottom of the recess of the bottle adapter **11**. The inner ring portion **13***b* of the valve member **13** has a diameter greater than the diameter of the opening **11***b* in the bottom of the recess of the bottle adapter **11**. The central portion of the inner ring portion **13***b* of the valve member **13** is provided with an orifice **13***d*. The diameter of the orifice **13***d* is substantially less than the diameter of the opening **11***b* in the bottom of the recess of the bottle adapter **11**. From the foregoing it may be seen that any fluid pressure on the upper side of the portion **13***b* of the valve member **13** will seal the cooperating surfaces of the portion **13***b* and the recess of the bottle adapter **11** to prevent any fluid flow about the outer periphery of the portion **13***b* and through the opening **11***b* in the bottle adapter **11**. Thus fluid pressure from within the bottle **12** may only produce the flow of a metered amount of fluid through the orifice **13***d* of the valve member **13** and thence through the opening **11***b* of the bottle adapter **11** to the underside of the frame **10**. Any fluid pressures acting upwardly upon the portion **13***b* of the valve member **13** will cause the portion **13***b* to be hingedly raised from the bottom wall of the recess in the bottle adapter **11** to permit substantially the entire volume of any fluid at opening **11***b* to pass in an unrestricted manner into the bottle **12**.

The bottle **12** is provided with external threads at the open end thereof which permit the open end to be threaded into the recess of the bottle adapter **11** as shown in FIGURES 3 and 8. The bottle **12** is formed of a relatively

soft plastic material which is easily compressible, and which when released, will tend to assume its natural shape. The edge of the open end of the bottle is sealed against the portion **13***a* of the valve member **13** when the bottle **12** is securely threaded into the bottle adapter **11**. Thus no fluid from the bottle nor from the opening **11***b* of the bottle adapter **11** may escape from the recess in the bottle adapter **11** and over the outer surface of the bottle **12**.

A separator or weir **15**, formed of an elastomer material such as rubber, is cemented to the underside of the frame **10**. The separator or weir **15**, which is shown in plan view in the cross sectional view of FIGURE 5, has a rectangular shape substantially equal in dimension to the surface on the underside of the frame **10**. The center portion of the weir **15** is provided with a hole **15***a*. The hole **15***a* has a diameter greater than the diameter of the opening **11***b* of the bottle adapter **11**. The area of the weir **15** surrounding the opening **15***a* is of a reduced thickness to permit the reservoir plate **16** to securely engage the surface of the weir **15** without any interference from the shoulder **11***a* of the bottle adapter **11**. The weir **15** is further provided with a plurality of integrally formed ribs **15***b*. The ribs **15***b* are positioned in four groups. Each group of two ribs is positioned in one quadrant of the weir **15** with all of the ribs **15***b* positioned parallel to the longitudinall axis of the weir **15** and further with the ribs of each group being positioned in a spaced apart relationship to each other. The ribs **15***b* are further positioned to cooperate in a certain manner with the reservoir plate **16**.

The reservoir plate **16**, which is shown in the plan view in the cross sectional view of FIGURE 6, is formed of a relatively rigid material, and may be formed of a plastic material such as that made under the trade name of Implex R. The reservoir plate **16** is substantially rectangular in shape with the length and width thereof being slightly smaller than the length and width of the weir **15**. The upper side of the reservoir plate **16** is formed with an integral shoulder **16***a* positioned about the periphery thereof. The upper side of the shoulder **16***a* is provided with a small bead **16***b* extending continuously thereabout. The upper side of the reservoir plate **16** is further provided with two integrally formed ribs **16***c* which are positioned in an end-to-end spaced apart relationship on the longitudinal center line of the reservoir plate **16**. A boss **16***d* is formed as a part of each of the ribs **16***c* intermediate the ends thereof and each of the bosses **16***d* is provided with a threaded hole therethrough. The threaded holes in the bosses **16***d* are further so positioned that when the upper side of the reservoir plate **16** is positioned in contact with the weir **15** those threaded holes are axially aligned with holes through the weir **15** and the frame **10**. Thumbscrews **17** are inserted through those holes and threaded into the holes in the bosses **16***d* to draw the shoulder **16***a* and the ribs **16***c* of the reservoir plate into firm fluid-sealing contact with the surface of the weir **15**. The bead **16***b* serves to aid in producing a good fluid seal between the weir **15** and the reservoir plate **16**. The heights of the ribs **15***b* of the weir **15** and the ribs **16***c* and the shoulder **16***a* of the reservoir plate **16** are substantially equal so that as the ribs **16***c* of the reservoir plate engage the weir **15**, the ribs **15***b* of the weir **15** will engage the upper surface of the reservoir plate **16** in a firm fluid-sealing relationship therewith. A plurality of spaced apart passageways positioned parallel to the longitudinal axis of the frame **10** are thus effectively defined. As may be seen in FIGURE 5, the shoulder **16***a* of the reservoir plate **16** occupies an area about the periphery of the weir **15**, and the outer ends of the ribs **15***b* and **16***c* are spaced a short distance from the shoulder **16***a*. The inner ends of the ribs **15***b* and **16***c* terminate on transverse lines which are spaced apart a distance slightly greater than the diameter of the hole **15***a* in the weir **15**. The area of the reservoir plate **16** within the shoulder **16***a* is provided with a grid of

uniformly spaced apart holes 16*e* which extend through the reservoir plate to the underside thereof as may be seen in FIGURE 4. The grid of holes 16*e* are positioned on each side of and also between the inner ends of the ribs 15*b* of the weir 15 and the ribs 16*c* of the reservoir plate 16. Thus it may be seen that in the assembled condition of the reservoir plate 16 and the frame 10, the holes 16*e* in the reservoir plate 16 will provide for a uniform distribution of ink over substantially the entire underside of the reservoir plate 16. By virtue of the central location of the opening 11*b* in the bottle adapter 11 and the above described pattern of the ribs 15*b* and 16*c* of the weir 15 and reservoir plate 16, respectively, ink delivered through the opening 11*b* of the bottle adapter 11 will flow toward each longitudinal side of the reservoir plate 16 and through the passageways defined by the ribs 15*b* and 16*c* to the ends of the reservoir plate 16. This pattern of ink flow will cause substantially a uniform dispersion of ink through the holes 16*e* of the reservoir plate 16. An important advantage of the above described construction is apparent when consideration is given to a temporary placement of the frame 10 in a substantially vertical plane with the ribs 15*b* and 16*e* extending horizontally such as when in the use of the invention the hand stamp is set with one longitudinal edge of frame 10 and the upper end of the bottle 12 on a table or other horizontal surface. In this position of the invention it can be seen that any ink within the confines of the weir 15 and the reservoir plate 16 will tend to be retained within the passageways defined by the ribs 15*b* and 16*c* rather than accumulating in the lower portion of the reservoir plate 16. This retention of the ink in the defined passageways is of important practical advantage since the use of the invention contemplates repeated printing with the hand stamp commingled with short periods of standing of the invention on one of its longitudinal edges.

The invention further comprises a pad 19 and a piece of cloth 20. The pad 19 is rectangular in shape and is formed of a porous resilient material such as a foamed polyurethane plastic material. The resiliency of the pad 19 provides for effective printing through a stencil upon somewhat irregular objects such as cardboard cartons, and the porosity of the pad 19 provides for a uniform distribution of ink from the upper to the lower surface thereof. The pad 19 is placed in contact with the underside of the reservoir plate 16 and is maintained in contact therewith by the piece of cloth 20. The piece of cloth 20 is sufficiently large to enclose the pad 19 and extend over the side walls of the reservoir plate 16 to which side walls the edge portions of the cloth 20 are secured by an adhesive. The cloth 20 may be formed of a material such as linen and further may be treated to insure a constant flat surface and to prevent any wrinkling of a stencil that may be used therewith.

From the foregoing description it is evident that the invention is used in combination with a stencil to produce an application of ink from the pad 19 through the cloth 20 and the stencil and upon some object. The construction of the weir 15 and reservoir plate 16 will provide for a uniform distribution of ink over the entire area of the pad 19, with the bottle 12, bottle adapter 11, and the described valve assembly providing a simple and effective arrangement for supplying ink to the chamber defined by the weir 15 and the reservoir plate 16. It is further evident from the foregoing description that the invention may easily be separated into its component parts for cleaning thereof.

Having described the invention what is considered and desired to be protected by Letters Patent is:

1. A hand stamp comprising, a rectangular frame having a hole through the center thereof, an ink bottle handle adapter secured to said frame over said hole, an elastomer member having a rectangular shape substantially equal to that of said frame, means securing said elastomer member on the underside of said frame, said elastomer member having a hole therethrough in axial alignment with said hole through said frame, a rectangularly shaped reservoir plate defining a chamber in cooperation with said elastomer member, means for securing said reservoir plate to the underside of said frame in cooperation with said elastomer member, said reservoir plate having a rectangular grid of openings formed therethrough, a plurality of ribs carried in said chamber and extending between said elastomer member and said reservoir plate between said openings and defining a plurality of passageways about said openings, said plurality of ribs further positioned on axes parallel to the longitudinal axis of said reservoir plate and said frame, and pad means on the underside of said reservoir plate for receiving ink from said grid of openings and uniformly distributing said ink to the underside of said pad means.

2. In a hand stamp as defined in claim 1, wherein said plurality of ribs are elastomer ribs integrally formed on said elastomer member.

3. In a hand stamp as defined in claim 1, wherein one portion of said plurality of ribs comprises elastomer ribs integrally formed on said elastomer member, and another portion of said plurality of ribs comprises rigid ribs integrally formed on said reservoir plate.

4. A hand stamp comprising, a frame having a hole therethrough, an ink bottle handle adapter secured to said frame over said hole, an elastomer member carried on the underside of said frame, a reservoir plate defining an ink chamber in cooperation with said elastomer member, means for securing said reservoir plate to the underside of said frame in cooperation with said elastomer member, a pair of ribs integrally formed on said reservoir plate in said chamber and extending into contact with said elastomer member, said pair of ribs positioned substantially on the longitudinal center line of said reservoir plate and in a spaced apart end-to-end relationship to each other on each side of said holes through said frame, a plurality of elastomer ribs integrally formed on said elastomer member and extending into contact with said reservoir plate, said plurality of elastomer ribs positioned in a parallel spaced apart relationship to said pair of ribs, said pair of ribs and said plurality of elastomer ribs defining a plurality of ink passageways, a plurality of openings formed through said reservoir plate in a spaced apart relationship to each other between said pair of ribs and said plurality of elastomer ribs, and pad means carried on the underside of said reservoir plate for receiving ink from said plurality of openings and uniformly distributing said ink to the underside of said pad means.

5. A hand stamp comprising, a frame having a hole therethrough, an ink bottle handle adapter secured to said frame over said hole, an elastomer member carried on the underside of said frame, a reservoir plate having an integrally formed shoulder on the upper side marginal edges thereof, said reservoir plate and said shoulder defining an ink chamber in cooperation with said elastomer member, means for securing said reservoir plate to the underside of said frame with said shoulder in cooperation with said elastomer member, a pair of ribs integrally formed on said reservoir plate within the area defined by said shoulder and extending into contact with said elastomer member, said pair of ribs positioned substantially on a center line of said reservoir plate and in a spaced apart end-to-end relationship to each other on each side of said hole through said frame, a plurality of elastomer ribs integrally formed on said elastomer member and extending into contact with said reservoir plate within the area defined by said shoulder, said plurality of elastomer ribs further positioned in a parallel spaced apart relationship to and on each side of said pair of ribs, said pair of ribs and said plurality of elastomer ribs defining a plurality of ink passageways, a plurality of openings formed through

said reservoir plate in a spaced apart relationship to each other in said ink passageways, and pad means on the underside of said reservoir plate for receiving ink from said openings and uniformly distributing said ink to the underside of said pad means.

6. In a hand stamp as defined in claim 5, a resilient bottle handle carried in an inverted position in said adapter, valve means carried in said adapter and cooperating with said bottle handle and said hole in said frame for delivering a metered amount of ink through said hole in said frame responsive to a compression of said bottle handle.

7. In a hand stamp as defined in claim 6, wherein said valve means is further formed to permit a volume of air substantially larger than said metered amount of ink to enter said bottle handle through said hole in said frame responsive to a release of compression from said bottle handle, and said valve means being further formed to seal said bottle handle against the escape of any ink from said bottle handle other than through said hole in said frame.

8. A hand stamp comprising, a rectangular frame having a hole through the center thereof, an ink bottle handle adapter secured to said frame over said hole, an elastomer member carried on and substantially covering the underside of said frame, a rectangular reservoir plate having an integrally formed shoulder on the upper side marginal edges thereof, said reservoir plate and said shoulder defining an ink chamber in cooperation with said elastomer member, means for securing said reservoir plate to the underside of said frame with the longitudinal axis of said reservoir plate positioned parallel to the longitudinal axis of said frame and with said shoulder in cooperation with said elastomer member, a pair of ribs integrally formed on said reservoir plate within the area defined by said shoulder and extending into contact with said elastomer member, said pair of ribs positioned substantially on the longitudinal center line of said reservoir plate and in a spaced apart end-to-end relationship to each other on each side of said hole through said frame, a plurality of elastomer ribs integrally formed on said elastomer member and extending into contact with said reservoir plate within the area defined by said shoulder, said plurality of elastomer ribs further positioned in a parallel spaced apart relationship to each other and to said pair of ribs on each side of said pair of ribs to define a plurality of ink passageways, a plurality of holes formed through said reservoir plate in a spaced apart relationship to each other within said passageways, and pad means on the underside of said reservoir plate for receiving ink from said openings and uniformly distributing said ink to the underside of said pad means.

9. In a hand stamp as defined in claim 8, wherein said pad means comprises a porous rectangular pad and a cloth member positioned on the underside of said porous pad and having the edge portions thereof secured to the edge portions of said reservoir plate.

10. In a hand stamp as defined in claim 8, a resilient bottle handle carried in an inverted position in said adapter, and valve means carried in said adapter and cooperating with said bottle handle and said hole in said frame for delivering a metered amount of ink through said hole in said frame responsive to a compression of said bottle handle and for permitting a substantially larger volume of air to enter said bottle handle responsive to a release of compression from said bottle handle.

11. A hand stamp comprising, a frame having a hole therethrough, an ink bottle handle adapter secured to said frame over said hole, an elastomer member carried on the underside of said frame, a reservoir plate defining a chamber in cooperation with said elastomer member, means for securing said reservoir plate to the underside of said frame in cooperation with said elastomer member, a pair of ribs integrally formed on said reservoir plate in said chamber and extending into contact with said elastomer member, said pair of ribs positioned substantially on the longitudinal center line of said reservoir plate and in a spaced apart end-to-end relationship to each other on each side of said hole through said frame, a plurality of openings formed through said reservoir plate on each side of said pair of ribs, and pad means carried on the underside of said reservoir plate for receiving ink from said plurality of openings and uniformly distributing said ink to the underside of said pad means.

12. In a hand stamp as defined in claim 11, wherein said means for securing said reservoir plate to the underside of said frame in cooperation with said elastomer member comprises a pair of holes through said frame and said elastomer member over said pair of ribs, a threaded hole formed in each of said pair of ribs in axial alignment with one of said pair of holes, and a pair of thumbscrews carried through said pair of holes and threaded into said holes in said pair of ribs.

References Cited in the file of this patent

UNITED STATES PATENTS

671,423	McTernen	Apr. 2, 1901
1,408,207	Jones	Feb. 28, 1922
2,020,151	Modden	Nov. 5, 1935
2,116,077	Mauguy et al.	May 3, 1938
2,143,661	Schrader	Jan. 10, 1939
2,699,888	Crane	Jan. 18, 1955
2,872,962	Laurent	Feb. 10, 1959
2,911,906	Kiang	Nov. 10, 1959
2,919,642	Mooney	Jan. 5, 1960
3,035,516	Lee	May 22, 1962
3,090,304	Sulkie	May 21, 1963

FOREIGN PATENTS

102,291	Australia	Oct. 19, 1937