United States Patent [19]

Rabelow

[11] **3,799,053**

[45] **Mar. 26, 1974**

[54] **HAND PRINTER**

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[73] Assignee: **The Marsh Stencil Machine Company,** Belleville, Ill.

[22] Filed: **July 13, 1972**

[21] Appl. No.: **271,257**

Related U.S. Application Data

[63] Continuation-in-part of Ser. No. 110,385, Jan. 28, 1971, abandoned.

[52] **U.S. Cl.** **101/125,** 101/298, 101/328, 101/333

[51] **Int. Cl.** **B41f 15/00,** B41f 15/38

[58] **Field of Search** 101/125, 328, 297, 298, 101/327, 333, 371

[56] **References Cited**

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Primary Examiner—Clyde I. Coughenour
Attorney, Agent, or Firm—Rogers, Ezell & Eilers

[57] **ABSTRACT**

There is shown a hand printer for stenciling, which comprises an inking unit for receiving a stencil, and a table reciprocably supporting said inking unit for stenciling in substantially one extreme position of movement and for storage in the other extrme position of movement. The inking unit includes an ink pad and reservoir disposed beneath the table and an integrated siphon ink flow control squeeze bottle handle providing an ink supply above the table. An operative compression spring maintains the inking unit in rest or storage position, said spring yielding to downward pressure to permit depression thereof for stenciling and returning said unit to storage position after release of such pressure.

13 Claims, 12 Drawing Figures

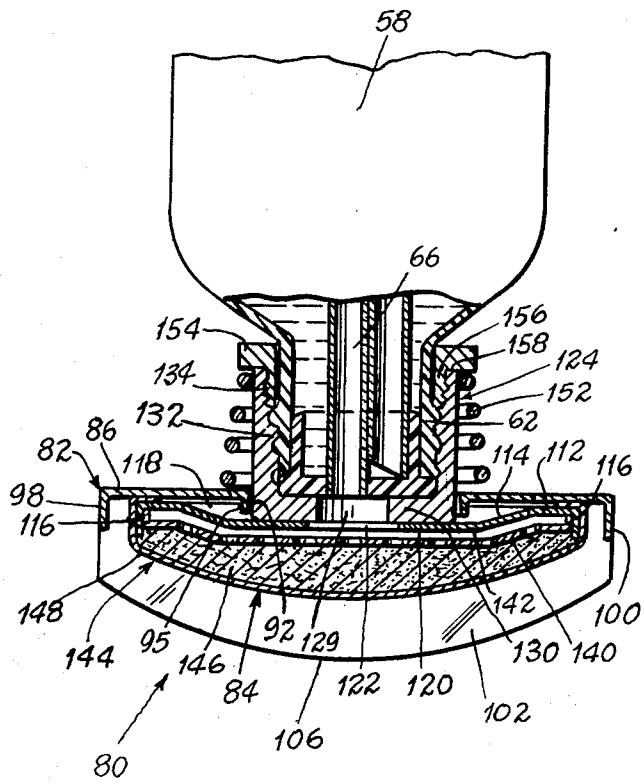


Fig. 1.

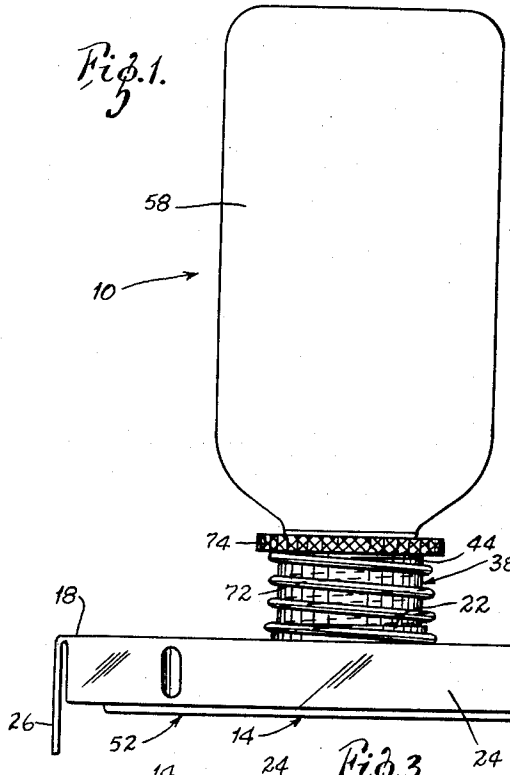


Fig. 2.

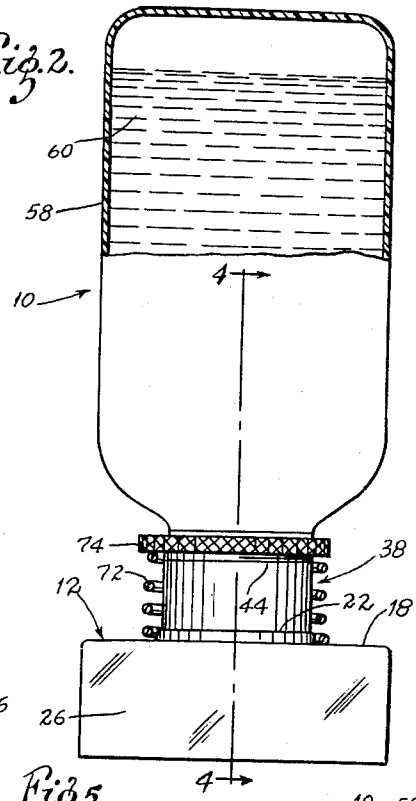


Fig. 3.

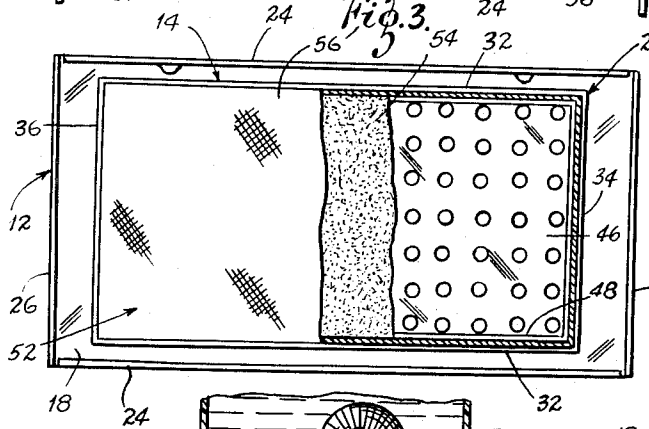


Fig. 4.

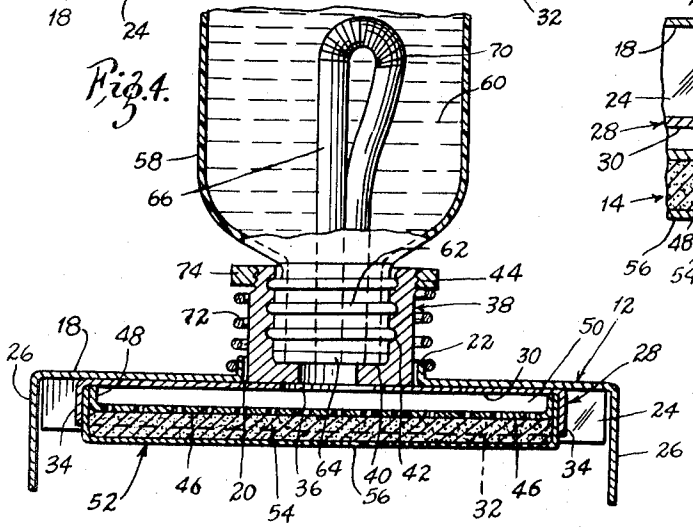


Fig. 5.

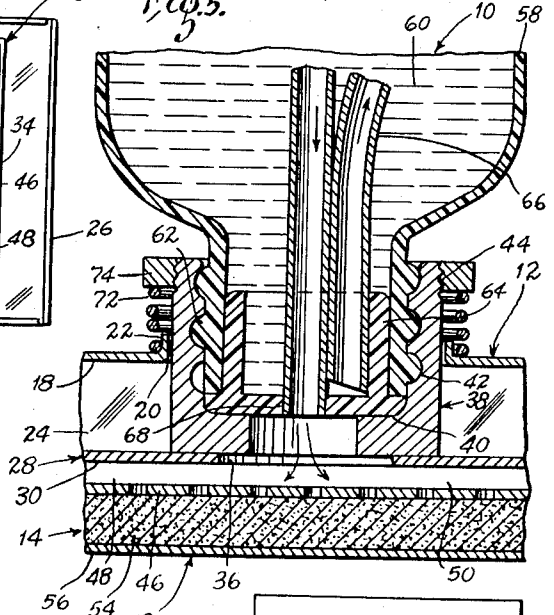


Fig. 6.



Fig. 7.

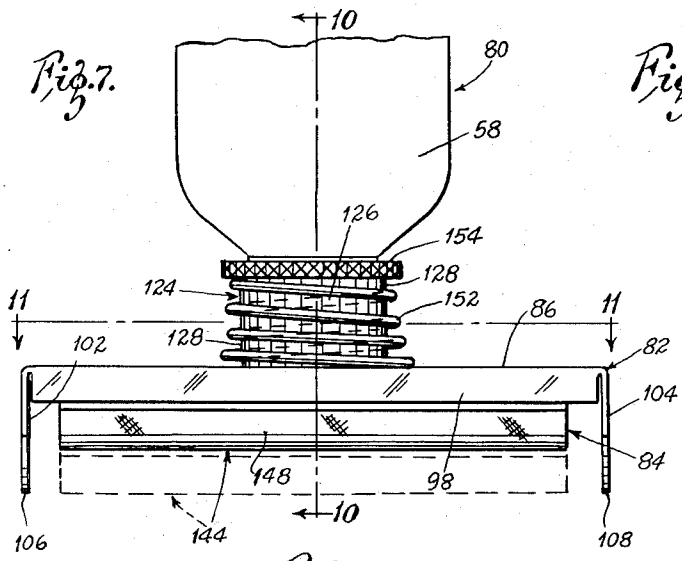


Fig. 8.

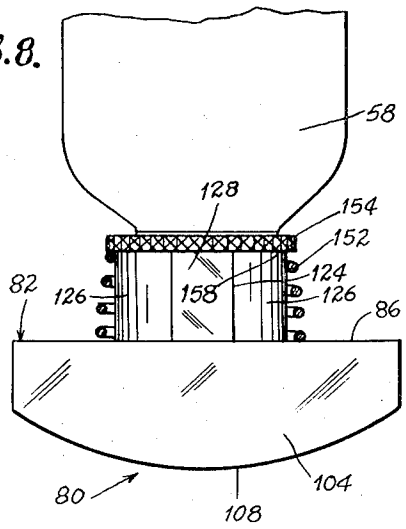


Fig. 9.

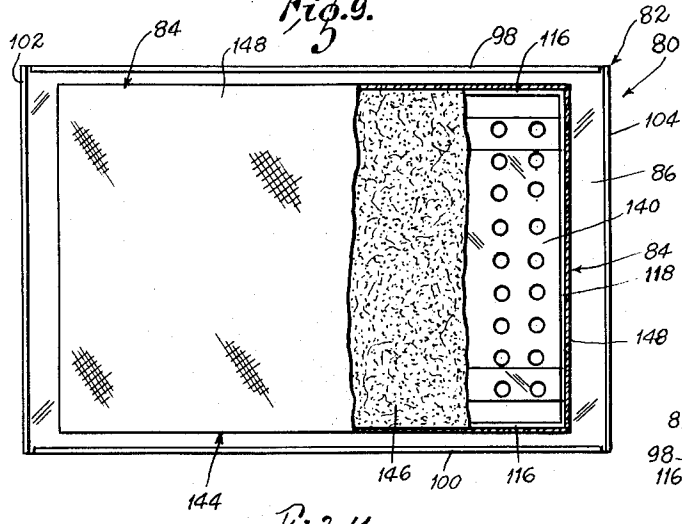


Fig. 10.

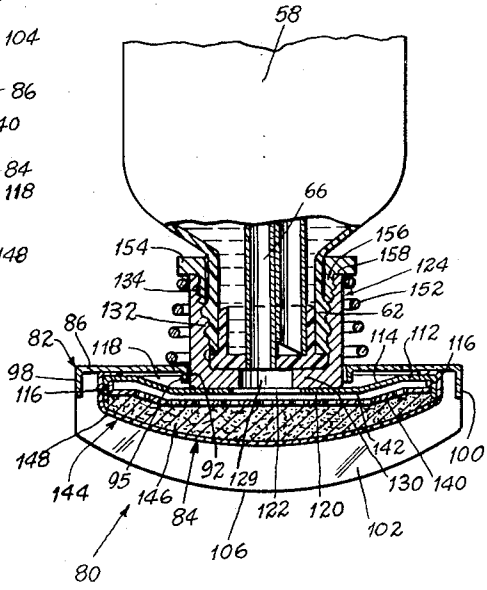


Fig. 11.

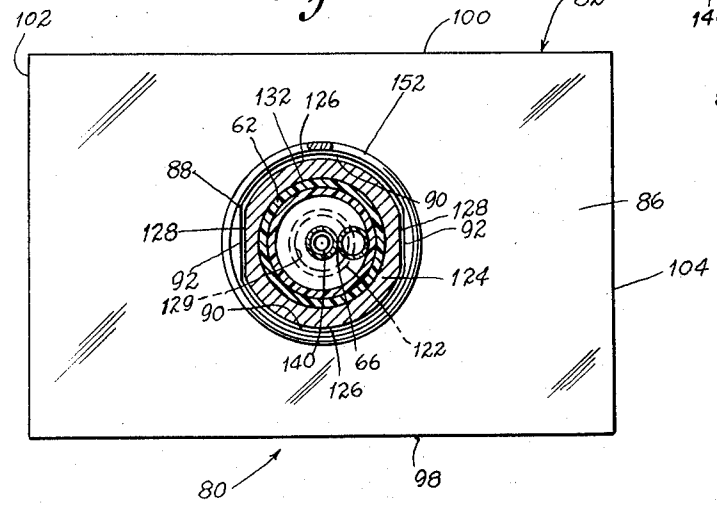
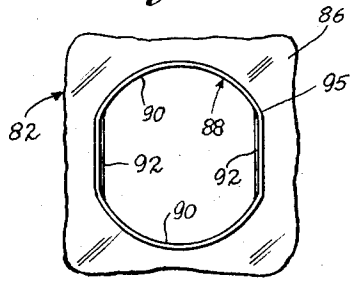


Fig. 12.



HAND PRINTER

BACKGROUND OF THE INVENTION

This application is a continuation-in-part of U.S. Pat. application Ser. No. 110,385, entitled HAND PRINTER, dated Jan. 28, 1971, now abandoned.

1. Field of the Invention

The present invention relates generally to the stenciling art, and more particularly to a novel hand printer for stenciling.

2. Description of the Prior Art

In the stenciling art, there are many patents disclosing devices sometimes called hand printers for employing precut thin stencils in addressing packages, cartons, and the like. However, there has long been the need for a self-contained hand printer, in effect, which handles such thin stencils effectively inkwise, which includes storage means, as a table, for the inking means when not in use, and which can be accurately employed in stenciling operations.

SUMMARY OF THE INVENTION

In brief, the present novel hand printer comprises a table and an inking unit adapted to receive a thin stencil reciprocably supported thereon for stenciling in substantially one extreme position thereof and for storage or rest in the other extreme position. The inking unit includes an ink pad and reservoir disposed beneath the table and an integrated siphon ink flow control squeeze bottle handle providing an ink supply above the table. An operative compression spring maintains the inking unit in rest or storage position, said spring yielding to down-ward pressure to permit depression thereof for stenciling and returning said unit to storage position after release of such pressure.

In one embodiment of the invention means provide a rocking motion to the inking unit during printing.

Therefore, objects of the present invention are to provide a novel hand printer which incorporates structure providing effective storage of the inking unit when not in use, which includes sturdy and readily usable means permitting stenciling depression of the inking unit and automatic return of the inking unit to rest position, which includes a substantially nonleak siphon controlled ink supply, which can be quickly and easily dismantled for cleaning parts replacement, and the like, and reassembled, which is constructed for long efficient service with minimum repair, which incorporates a counter pressure in the spring action providing a controlled mark or touch upon the carton or object stenciled as opposed to free hand operation heretofore used, which can be effectively employed with minimum instruction, which is adaptable for use with a wide range of stencil sizes, and which otherwise fulfills the objects and advantages sought.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a side elevational view of a hand printer incorporating the teachings of the present invention, the movable parts being in rest positions;

FIG. 2 is an end elevational view thereof, parts being in vertical cross-section for illustration of details;

FIG. 3 is a bottom plan view thereof, parts being in section and broken away for illustration of detail;

FIG. 4 is a vertical cross-sectional view taken on substantially the line 4—4 of FIG. 2, showing the inking unit in rest or storage position;

FIG. 5 is an enlarged fragmentary vertical cross-sectional view showing in greater detail the central portion of FIG. 4, the inking unit being in stenciling or depressed position;

FIG. 6 is a plan view of a small stencil usable with the present hand printer.

FIG. 7 is a side elevation view of hand printer of another embodiment of this invention, the movable parts shown in the rest or retracted position;

FIG. 8 is a right end elevation view of FIG. 7;

FIG. 9 is a bottom view of FIG. 7 with parts broken away to better illustrate the invention;

FIG. 10 is a vertical cross section taken on the line 10—10 of FIG. 7;

FIG. 11 is a view in section taken along the line 11—11 of FIG. 7; and

FIG. 12 is a fragmentary bottom plan view of the table member of the invention, particularly illustrating the flange-surrounded opening formed centrally therein.

DESCRIPTION OF PREFERRED EMBODIMENTS

Referring to the drawings more particularly by reference numerals, 10 indicates generally a stencil-receiving hand printer including the principles of the present invention. Broadly the hand printer 10 comprises a table or cover 12 which supports and guides for reciprocating movement an inking unit 14, the latter operatively receiving a stencil 16.

The table 12 preferably is of smooth metal to aid in maintaining a clean item, although other materials can be employed. The table 12 includes a top panel 18 having a central annular opening 20 defined by an upwardly directed narrow flange 22, opposed depending side skirts 24, and opposed end panels 26 of greater depth than the skirts 24. Two spaced dimples 27 are formed in one side skirt 24 for a purpose alluded to below. The end panels 26 support the table 12.

The inking unit 14 comprises an inverted pan 28 having a bottom panel 30, opposed sides 32, and opposed ends 34. An aperture 36 is provided in the panel 30. Secured to the external face of the panel 30 as by welding or other means, or integral therewith, in position surrounding the aperture 36 is a sleeve 38 of the axial cross-section shown and of an external diameter permitting comfortable insertion thereof through the opening 20 of the table 12. The sleeve 38 includes a smooth internal annular shoulder 40, internal threads 42, and external threads 44. A perforated plate 46 is secured within the pan 28 by welding, adhesive or otherwise, and is spaced from the bottom panel 30 by integral flanges 48, thereby defining with the panel 30 an ink reservoir 50. Disposed in the pan 28 adjacent the perforated plate 46 is a conventional ink pad 52 including resilient ink receiving material 54 and a cloth or the like cover 56, the cover 56 being adhesively or otherwise secured to the sides 32 and ends 34 interiorly thereof. A flexible squeeze bottle handle 58 of ink 60 has an externally threaded neck 62. A cup-like plug 64 of plastic or other suitable material sealingly stoppers the neck 62. A siphon tube 66 of plastic or the like has one end sealingly mounted in an aperture 68 in the cup-like plug 64. The tube 66 preferably includes an accordion-like crimped portion 70 permitting looped dispo-

sition in the bottle **58**, as illustrated, with the other end thereof within the cup-like plug **64**, for substantially complete ink dispensing. The bottle neck **62** threads into the sleeve **38** with the cup **64** in sealing engagement with the internal annular shoulder **40** of the latter, as illustrated. The bottle **58** can be readily removed and replaced when empty or for other purposes. It will be understood that the siphon tube **66** controls flow from the bottle **58** under squeeze pressure applied to the latter. Slight pressure to the bottle **58** dispenses ink **60** into the ink reservoir **50** above the pad **52**, the ink **60** reaching the pad **52** through the dispensed openings of the perforated plate **46**. The siphon tube **66** substantially prevents dripping of ink, and even with ink thinner than normally used in stenciling, only ink in the short leg of the siphon tube **66** will flow out while standing after use, which will be handled by the ink reservoir **50**.

As is clearly shown in the drawings, in assembled rest operative relation, the sleeve **38** extends through the opening **20** with the bottom panel **30** of the inverted pan **28** snugly against the bottom side of the top panel **18** of the table **12**. A compression spring **72** about the sleeve **38**, having one end abutting the top side of the panel **18** surrounding the flange **22** and the other engaging a knurled nut **74** on the external threads **44** of the sleeve **38**, maintains this relationship. Thus, the table **12** both houses the inverted pan **28** and holds the ink pad **52** in retracted position when not in use. It will be noted that one side **32** of the inverted pan **28** is adjacent the dimples **27**, see FIG. **2**. The dimples **27** guide the inking unit **14** in use of the hand printer **10** to substantially eliminate rotation of the unit **14**, which is objectionable.

To use the hand printer **10**, as to address cartons, the stencil **16**, which has been previously cut, is placed against the inked cloth cover **56**, the ink retaining the stencil **16** in place. The hand printer **10** is selectively disposed against a carton with the edges of the opposed panels **26** engaging a surface thereof in spanning relation to the area to receive the stenciling. Thereupon, the squeeze bottle handle **58** is depressed to move the stencil **16** into engagement with the carton surface to print and is then released, the spring **72** effecting a return of the pad **52** to rest position. This stenciling action may be repeated many times with a single stencil **16**, and for the life of the spring **72** for numerous stencils.

In FIGS. **7** through **12** there is shown another embodiment of the invention. A hand printer **80** of this described embodiment comprises a table or cover **82** which supports for reciprocating movement an inking unit **84**, the latter operatively receiving a stencil such as the stencil **16** of FIG. **6**.

The table **82** is very similar to the table **12** of the previously described embodiment and includes a top panel **86** having a central opening **88**. The opening **88** is shaped generally as shown in FIGS. **11** and **12** with opposed annular sides **90** between opposed straight sides **92**. A narrow flange **95** extends downwardly and slightly outwardly all around the periphery of the opening **88**. The table **82** also includes opposed depending side skirts **98** and **100** and opposed end panels **102** and **104** of greater depth than the skirts **98** and **100** and having rounded bottom edges **106** and **108**, respectively, to form rockers on which the table **82** is supported. The straight sides **92** of the opening **88** are parallel to the end panels **102** and **104**.

The inking unit **84** comprises an inverted pan **112** having a bottom panel **114**, opposed sides **116**, and opposed ends **118**. The bottom plate **114**, instead of being flat, has a depressed center portion **120** for purposes to be described, and an aperture **122** axially aligned with the opening **88** in the table **82**. Secured to the external surface of the panel **114**, as by welding or other suitable means, and in position surrounding the aperture **122**, is a sleeve **124**. The external shape and dimensions of the sleeve **124** are best shown in FIG. **11** with the sleeve **124** having opposed curved sides **126** which are complementary with the curved sides **90** of the opening **88**, and opposed straight sides **128** which are complementary with the opposed straight sides **92** of the opening **88**. The clearances between the straight sides of the opening **88** and the straight sides of the sleeve **124** are relatively small to hold the inking unit **84** in close end alignment. But the clearances between the curved sides **90** of the opening **88** and the sleeve **124** are somewhat greater to allow a tilting motion of the sleeve **124** within the opening **88** and thus allow a rocking motion of the inking unit **84** relative to the table **82**.

Internally the lower end of the sleeve **124** is formed in an opening **129** in the annular shoulder **130** against which is sealingly engaged the cup **64** of the bottle handle **58** heretofore described in connection with the first described embodiment. Above the annular shoulder **130** is a lower threaded section **132** above which is an upper threaded section **134** of greater diameter than the lower threaded section.

A perforated plate **140** similar to the plate **46** of the first-described embodiment is secured within the pan **112**. The perforated plate **140** has generally the same shape as the bottom panel **114** and is positioned in spaced parallel relationship therewith, to define with the panel **112** an ink reservoir **142**. Disposed in the pan **112** adjacent the perforated plate **140** is a conventional ink pad **144** including resilient ink receiving material **146** and a cloth or the like cover **148**, the cover **148** being adhesively or otherwise secured to the sides **116** and ends **118** of the pan **112**. The cloth covered surface of the ink pad **144** is curved generally in the same direction as the rockers **106** and **108** but has a greater radius of curvature than the rockers **106** and **108** for purposes to be described.

A coil spring **152** surrounds the sleeve **124** with its bottom end abutting the top side of the panel **86** and its top end engaging the under side of a knurled ring **154**. The ring **154** has an externally threaded neck portion **156** that engages the upper internal threads **134** of the sleeve **124**, the ring **154** being formed at its upper end in an outwardly extending annular shoulder **158** which seats on the upper end of the sleeve **124** when the ring **154** is screwed in place.

The externally threaded neck portion **62** of a flexible squeeze bottle handle **58** of the type of the first described embodiment of this invention, is screwed into the sleeve **124** to engage the lower internal threads **132**. The operation of the flexible squeeze bottle handle **58** is identical to that of the first described embodiment.

OPERATION

In many respects the printer of this described em-

bodiment operates like that of the first described embodiment. For example, in like manner the squeeze bottle handle **58** can be easily replaced by simply unscrewing its neck from the sleeve **124,** and the inking unit **112** can be easily replaced by simply removing the ring **154** and spring **152** thus allowing the sleeve **124** to slip downwardly through the opening **88.** The unit can be assembled and disassembled in a matter of seconds and without the use of tools of any kind.

In the assembled rest operative condition, the spring **152** acting against the plate **86** and ring **154** biases the sides of the bottom panel **114** against the bottom of the plate **86** so that the ink pad **144** is held in the retracted position well above the rocker edges **106** and **108.**

To use the hand printer **80,** as to address cartons, the stencil **16,** which has been previously cut, is placed against the inked cloth cover **148,** the ink retaining the stencil **16** in place eliminating the need for clamps. The hand printer **80** is selectively disposed against the carton with the rocker edges **106** and **108** engaging a surface thereof in spanning relation to the area to receive the stencilling. Thereupon, by manipulation of the squeeze bottle handle **58,** the entire printer **80** is rocked to one side of the rocker surfaces **106** and **108,** and then, while depressing the squeeze bottle handle **58** to move a corresponding side of the stencil **16** into engagement with the carton surface to be printed, the entire unit is rocked on the rocker edges **106** and **108** to the opposite side whereupon the squeeze bottle handle **58** is released, the spring **152** effecting a return of the pad **144** to its retracted position. As the printer is operated, not only does the entire printer rock on the rocker edges **106** and **108,** but the inking unit **112** also rocks within the table **82** on the curved pad surface **148.** Although the straight sides and small clearances therebetween insure that the inking unit will rock along the same path as the table **82** and that the inking unit will maintain its end alignment, the greater clearances between the curved surfaces of the sleeve **124** and opening **88** allow the sleeve **124** to tilt within the opening **88,** and hence the ink pad **144** to rock relative to the table **82.** This insures proper and uniform contact of the stencil on the surface to be marked. The greater radius of the ink pad relative to the radius of the rocker surfaces **106** and **108** allows the extreme long edges of the pad to contact the surface to be marked with a relatively slight depression of the handle.

Another unique feature of this invention lies in the formation of the reservoir **142** with the center section depressed so that the thickness of the pad **144** is substantially uniform along its curve. This enables the use of a reservoir with a much smaller volumetric capacity than would otherwise be required which in turn prevents overfeeding of ink to the ink pad which has been a problem with prior art hand printers.

Still another feature of this invention is that relatively large stencils can be used with it and yet without the need of any external clamps to hold the stencil in place. This is achieved by the combined gentle curvature of the pad which when saturated with ink provides an adhesive-like holding power to keep the stencil in place. With the prior art units using clamps to hold the stencil in place, the compression of the pad during use tended to wrinkle the stencil. But with this invention the operative rocking motion of the printer tends to iron out the stencil and maintain it wrinkle free. Furthermore, a larger print area is achieved without clamps. For example, it has been found that the rocker-type printer of this invention gives superior results than flat printers for stencils over approximately two inches by four inches.

It is apparent that there has been provided a hand printer for stenciling which fulfills the objects and advantages sought therefor.

It is to be understood that the foregoing description and the accompanying drawing have been given by way of illustration and example. It is also to be understood that changes in form of the elements, which will be obvious to those skilled in the art, are contemplated as within the scope of the present invention which is limited only by the claims which follow.

What is claimed is:

1. A hand printer for printing a selected surface comprising a table having outwardly facing convexly curved rocking support surfaces adapted to rest on a surface on which the table may be rocked along a selected path, a printing unit having an outwardly facing convexly curved printing surface, means for mounting the printing unit to the table for reciprocating movement of the printing surface with respect to the curved rocking support between a rest position with the printing surface out of contact with the surface to be printed, and a print position with the printing surface contacting the surface to be printed and with its rocking path parallel to the rocking path of the table.

2. The hand printer of claim **1** comprising means biasing the printing unit in its rest position.

3. The hand printer of claim **1** wherein the mounting means further comprises means for mounting the printing unit to the table for rocking motion of the printing unit relative to the table.

4. The hand printer of claim **1** wherein the printing unit includes an ink pad having the curved printing surface and an ink reservoir above the pad for maintaining an ink supply to the printing surface.

5. A hand printer comprising a table having a top and opposed supporting members, the opposed supporting members having outwardly facing convexly curved rocking support surfaces on which the table is adapted to rest and to rock along a selected path, a printing unit having an outwardly facing convexly curved printing surface, means for mounting the printing unit on the table for reciprocating movement of the printing surface with respect to the curved rocking support between a rest position with the printing surface in spaced relation to a plane through the rocker surfaces of the supporting members in a direction toward the table top, and a print position with the printing surface adjacent the plane through the rocker surfaces.

6. The hand printer of claim **5** wherein the mounting means further comprises means for mounting the printing unit for rocking motion of the printing unit relative to the table along a path parallel to the rocking path of the table.

7. The hand printer of claim **6** wherein the radius of curvature of the printing surface is greater than the radius of curvature of the rocker surfaces.

8. The hand printer of claim **6** comprising means biasing the printing unit in its rest position.

9. The hand printer of claim **6** in which the printing unit includes an operating handle, said handle comprising a flexible squeeze bottle for storing ink.

10. The hand printer of claim **9** wherein the handle further comprises a looped siphon tube operatively dis-

posed in said bottle, a closure for said bottle, the closure having a passage therethrough, one end of the tube being mounted in said passage, the other end of the tube opening into the interior of the bottle adjacent the closure, whereby pressure on the bottle dispenses ink from the bottle through the tube.

11. The hand printer of claim **9** wherein the printing unit includes an ink pad having the curved printing surface and an ink reservoir above the pad, and means communicating the reservoir with the squeeze bottle for maintaining an ink supply to the printing surface.

12. The hand printer of claim **5** wherein the table has an opening in its top and the printing unit has a sleeve extending through the opening, the sleeve having means for receiving the neck of the flexible squeeze bottle handle, compression spring means, and means for mounting the compression spring means around the sleeve for biasing the printing unit in its rest position.

13. The hand printer of claim **12** wherein the clearance between the opening and the sleeve is such as to allow a tilting motion of the sleeve within the opening in a plane parallel to the rocking path of the table, thereby allowing a rocking motion of the printing unit relative to the table.

* * * * *