June 6, 1972 M. K. ROGERS 3,667,990

PRODUCTION OF INDICIA UPON SURFACE

Filed June 18, 1969 2 Sheets-Sheet 1

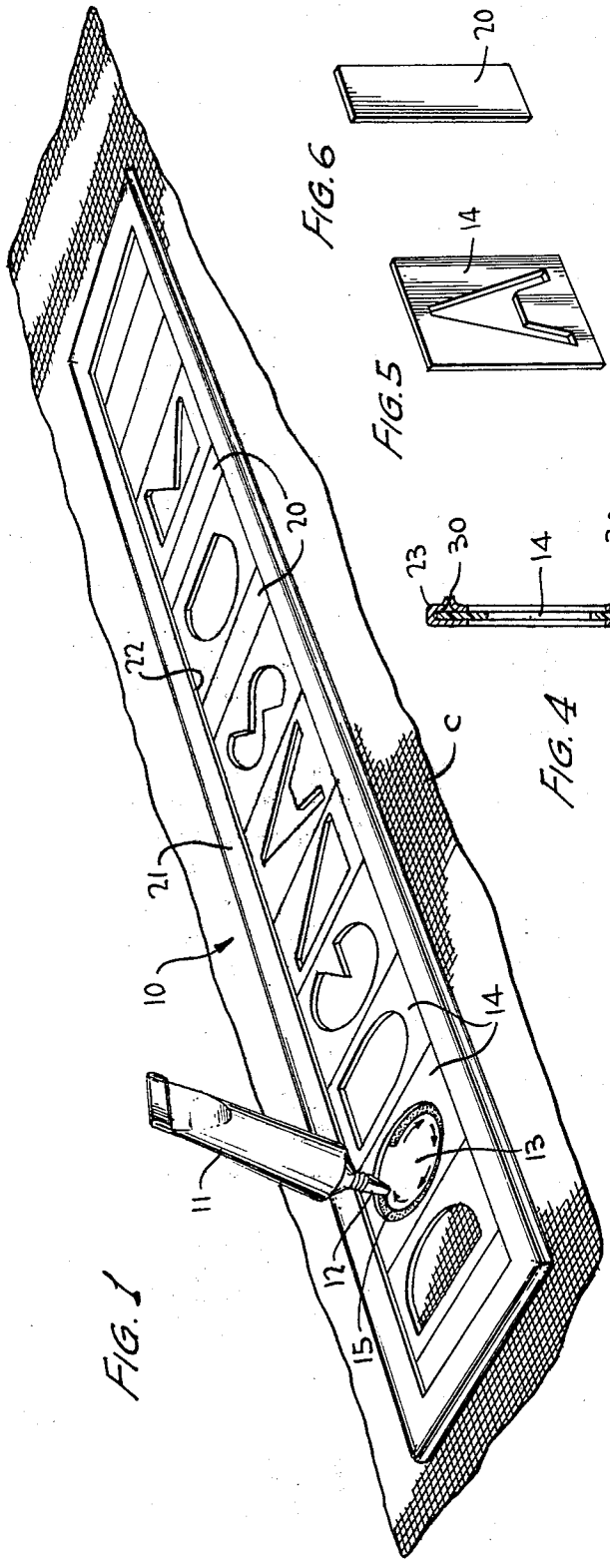


FIG. 1

FIG. 6

FIG. 5

FIG. 4

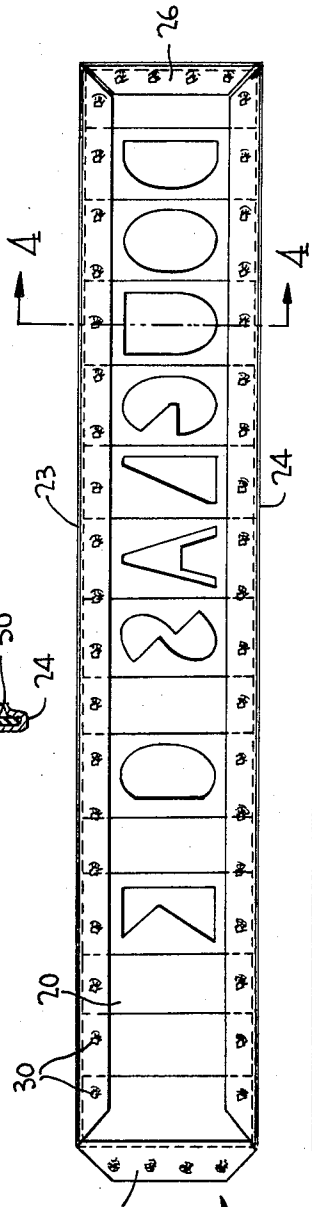


FIG. 2

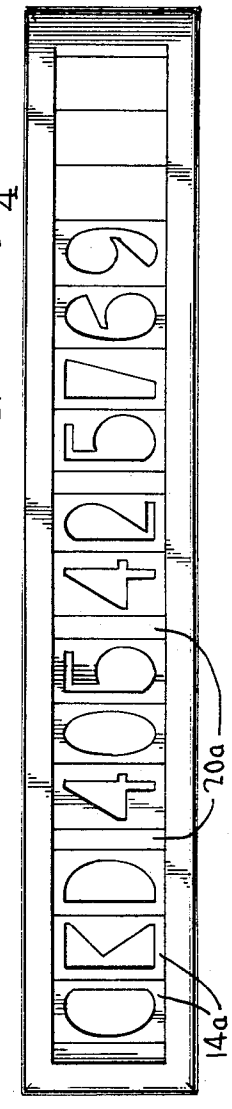


FIG. 3

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June 6, 1972 M. K. ROGERS 3,667,990

PRODUCTION OF INDICIA UPON SURFACE

Filed June 18, 1969 2 Sheets-Sheet 2

FIG. 7

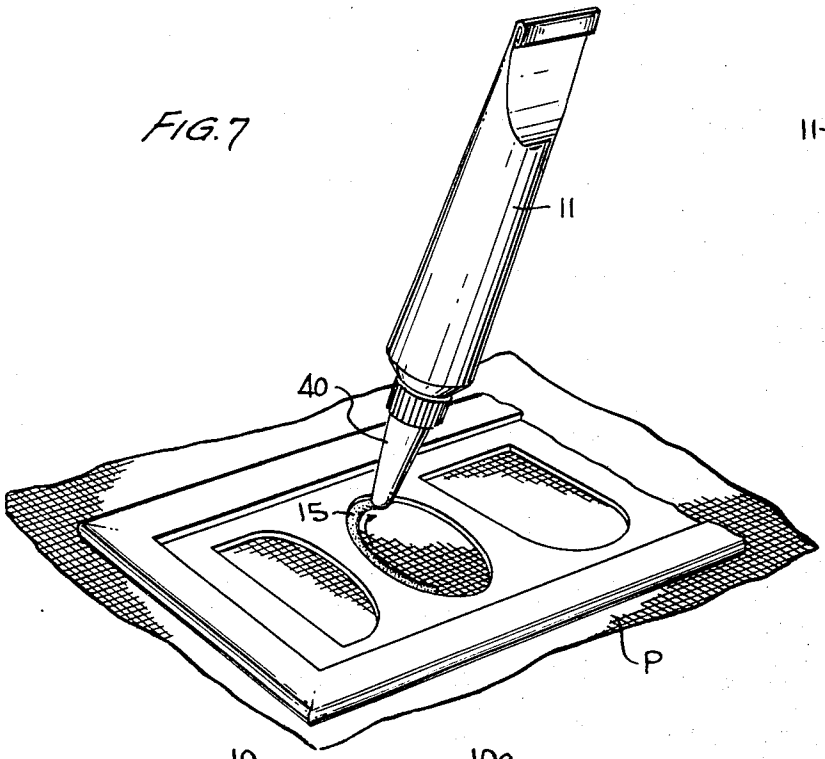


FIG. 8

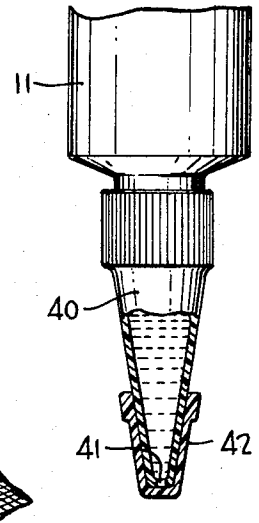


FIG. 9

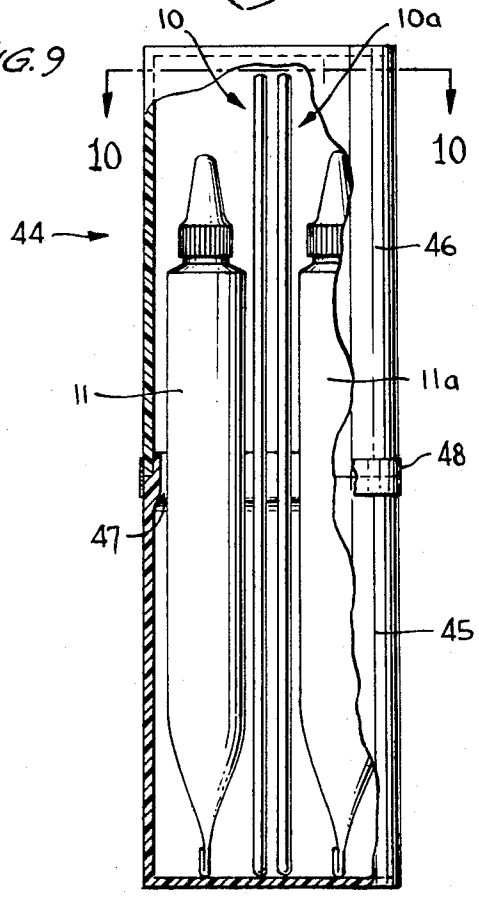
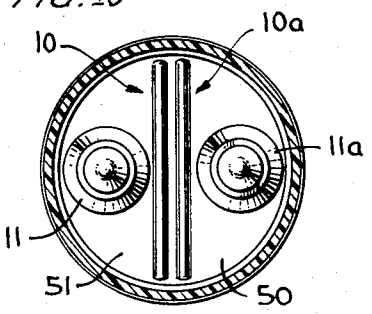


FIG. 10



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3,667,990

PRODUCTION OF INDICIA UPON SURFACE

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U.S. Cl. 117—38 8 Claims

ABSTRACT OF THE DISCLOSURE

A stenciling system including method and apparatus for marking indicia on a surface wherein the dispensing nozzle of a flexible tube of marking material is applied directly to said surface while being guided by said stencil. Regulation of the flow of ink is accomplished through manual pressure on the sides of the tube. A stencil assembly is disclosed having a unitary frame with bent-over edges to hold individual stencil members in position to form a composite display. A package is included in the kit for storing two stencils and two tubes of ink, said stencils bisecting the package to form compartments for the tubes.

The present invention relates to marking systems and, more particularly, to systems for marking indicia or the like utilizing a stencil device.

It is sometimes necessary to mark surfaces with identifying indicia in a permanent fashion. For example, in the armed services each member must mark his clothing for identification to insure return from the laundry facility and to prevent loss in other ways. Heretofore, it has been the practice to utilize indelible ink which is applied from a conventional rubber hand stamp made up in the proper combination display to signify the person's name and other identifying information. That is, in the prior art, the hand stamp or stamps, after being applied to an ink pad, are applied in the usual manner to the cloth thereby leaving the imprint of the indicia as desired.

While this prior art method of marking clothing has proven to be highly successful in the past and has been adopted by all of the armed services as well as nationally organized groups, such as the Boy Scouts of America, as the official marking method, certain factors have arisen over the last few years which makes it desirable for a new system to be provided. In particular, the clothing to be marked is today being developed along the lines of easy-care fabrics, which are generally resistive to receiving chemical compounds and liquids including marking materials or inks. That is to say, the military clothing being produced today from synthetic fibers is such as to generally resist receiving ink and maintaining the same in position for legibility for a long period of time. To complicate the situation, with the coming of fabrics resistive to chemicals, stronger detergents are being used to clean the fabrics, which in turn makes it more difficult for the laundry mark to resist removal after several washings. Furthermore, with the clothing lasting for longer periods of time, a marking which resists abrasion and wear, i.e., is more firmly anchored against removal by mechanical means, is clearly needed.

Thus, in accordance with a main object of the present invention there is provided a marking system for indicia or the like for marking on generally nonreceptive surfaces.

It is another object of the present invention to provide a method and apparatus for forming a mark which is highly resistive to destruction by outside forces.

In accordance with the present invention, a method of marking is provided wherein a reservoir of ink is moved

across the surface as guided by a stencil assembly, with the ink being directly supplied to the surface from a pressurized reservoir. With this innovation, the marked indicia is positively transferred to the surface without reliance on intervening transfer means. Furthermore, where the surface has interstices, such as in cloth, the marking material positively impregnates the same for firm anchoring and the formation of a homogeneous mark, and therefore one that is highly legible, is assured. It should be stated at this point, that while the marking method is thus particularly adapted for use in marking cloth, the method is of course suitable for marking on other materials.

Preferably, the reservoir to be guided by the stencil assembly takes the form of a conventional tube of ink. The operator merely inverts the tube of ink with the dispensing orifice in engagement with the surface to be marked through the stencil and follows the outline of the stencil member by guiding the neck of the tube as required. Such a system greatly simplifies the marking process since there is no intermediate member, such as a stamp pad, upon which the marking material must be placed prior to marking, as in the prior art stamp method. Indeed, the problem of dried out ink pads and the need for extra storage space has been completely eliminated in the present marking kit.

Furthermore, by applying positive pressure on the sides of the tube as the indicia mark is being made, the ink can be applied in a uniform manner by the operator varying the pressure as the formation of the mark progresses. That is, as the mouth of the tube moves along the surface, the operator can visually gauge the mark being made and make the necessary changes in pressure by squeezing the tube with more or less force.

In order to select the thickness of the mark being made, the stenciling kit of the present invention may include a selection of reservoir tips to fit the tube, which tips have different size orifices and/or spreading heads. With this arrangement, it is obvious that a quick change to different size lines for the indicia can be made to increase the versatility of the marking system. Such a reservoir has the further advantage of accommodating any initial flow or glob of ink from the tube due to built up pressure in the tube resulting from the manufacturing process or from inadvertent squeezing of the tube during storage.

The stencil for guiding the feeding of the marking material is of importance to the invention due to its simplicity and functionality of design. In essence, a unitary frame of bendable material, such as aluminum, is provided with a peripheral edge bent over into spaced relationship to the back of said frame so as to form a channel to receive and hold a plurality of individual stencil members or elements, the stencil members being exposed through a central opening in the frame. Individual stencil members are simplified to complement the overall simplicity of the system by not including islands and crossovers in the openings delineating the indicia to be formed. The underside of the unitary frame is provided with a series of spurs to hold the stencil in position on a penetrable surface, such as cloth, and to aid in spacing the stencil members above the surface to prevent lateral creeping of the marking material.

In accordance with another important feature of the present invention, the stencil system is provided in the form of a marking kit such that it will particularly meet the need of marking both light and dark clothes with at least two lines of information, as required by the armed services, and being capable of being stored yet readily available for use when needed, i.e., upon receiving a new issue of clothes. Thus, the kit of the present invention is comprised of at least two stencils and containers of light

and dark marking material stored in a package such that the stencils when in position form the compartments for the containers. The package is preferably cylindrical with the stencils and tubes inserted lengthwise and being substantially as long as the package, said package being divided into equal halves for easy access of the contents when the top half is removed. The stencils are also made to be substantially as wide as the package so that the interior surface of the package engages the sides of stencils to keep the same upright and in a bisecting position to form the compartments for the tubes. The top half of the cylinder is held in position by a friction joint with a removable strip of sealing tape along the joint to insure security of the contents prior to use.

Still other objects and advantages of the present invention will become readily apparent to those skilled in this art from the following detailed description, wherein I have shown and described only the preferred embodiments of the invention, simply by way of illustration of the best modes contemplated by me of carrying out my invention. As will be realized, the invention is capable of other and different embodiments, and its several details are capable of modification in various obvious respects, all without departing from the invention. Accordingly, the drawings and description are ot be regarded as illustrative in nature, and not as restrictive.

FIG. 1 is a perspective view of a stencil assembly and cooperating tube of ink in an operating mode in accordance with the present invention;

FIG. 2 is a view of the underneath side of the stencil assembly constructed in accordance with the present invention;

FIG. 3 is a top view of a stencil also constructed in accordance with the present invention, but with a different composite display of indicia;

FIG. 4 is a cross-sectional view taken along line **4—4** of FIG. 2;

FIG. 5 is a perspective view of a single stencil element adapted for use in the present marking system;

FIG. 6 is a spacer useful in the stencil assembly of the present invention;

FIG. 7 is an enlarged perspective view of the stencil assembly, and an accompanying marking tube in modified form;

FIG. 8 is a detailed view partly in cross section showing the reservoir tip of the modified form of the tube of marking material;

FIG. 9 is a side view partly broken away showing the package and its contents in the inventive relationship of the present invention; and

FIG. 10 is a cross-sectional view taken along line **10—10** of FIG. 9 showing the package and contents from above.

With specific reference to FIG. 1 of the drawings, there is shown an overall view from which an understanding of the method and apparatus of the stenciling system of the present invention can be readily gained. As shown therein, a stencil assembly **10** has been appropriately positioned on a piece of cloth C upon which a marking is to be made. To perform the marking operation of the present invention, a tube of ink **11** having flexible sides is first inverted with dispensing nozzle **12** passing through an operative opening **13** in an individual stencil member **14** of the assembly **10**. As shown, and as will be realized from studying this figure, the tube of marking material or ink is held in the hand (not shown) of the person doing the marking and caused to move in the required outlined path (as shown by the arrows) in order to provide a mark **15** of the indicia desired. As the nozzle **12** of the tube **11** is being moved in guiding relationship by engagement with the peripheral, indicia outlining edge of the opening **13**, the required pressure to the marking material is applied by sequeezing the sides of said tube **11**. It is of importance to note that as the mark **15** is being made the pressure required to be applied to the tube to force out the proper amount of ink can be accurately gauged so as to form a mark of homogeneous character and one which is highly legible.

As the marking material is being dispensed from the nozzle **12** and the tube **11** moved in the path, the material is desirably evenly spread by engagement of the end of said nozzle **12** with the cloth C. The particular marking material is not highly critical for the successful carrying out of the marking method of the present invention and it is therefore possible that any one of several commercially available liquid inks can be used. However, the marking material selected should have sufficient viscosity to allow controlled dispensing from the tube **11** when in an inverted position.

In FIG. 1 and in conjunction with FIG. 2, it can be seen that the stencil assembly **10** is made up of a plurality of the individual stencil members **14** and a select number of spacers **20** to form a composite display indicative of the desired information, such as a person's last name followed by the spaced initials. Frame **21** of the assembly **10** is of a novel construction in that it is formed of a single piece of bendable material, such as relatively light gauge aluminum. In this single piece of material a central opening is formed through which the individual stencil members **14** and spacers **20** are exposed to perform the marking operation.

To confine the stencil members **14** in the frame **21**, opposite peripheral edges **23, 24** and **25, 26** (see FIG. 2) are folded under so as to be a predetermined spaced distance from the back of the frame **21** equal to the thickness of the stencil members **14** (see (FIG. 4). The ends of the folded over edges **23–26** are mitered at a 45° angle to the fold lines so that the adjacent ones of the edges **23–26** mate, as can be seen for example in FIG. 2.

By having the edges **23–26** to be simply fold-overs of the unitary frame **21**, it will be realized that the construction of the stencil assembly **10** is greatly simplified. If necessary, one of the edges (note edge **25** in FIG. 2) can be opened from its permanent folded over position so as to allow the release of the stencil members **14** should a change in the composite display of indicia be required. Otherwise, the components are firmly and permanently held in place ready for immediate use in marking. It will be obvious that the stencil assembly **10** (FIG. 2) is set up as the name of the user; whereas, the stencil assembly **10*a*** (FIG. 3) is set up as the initials and serial number, all in conformance with the standardized requirements of the armed services.

The individual stencil members **14** can be of any suitable material but are preferably formed of transparent plastic so that easy alignment on the surface to be marked may be readily attained. For example, it may be desirable after the marking has been in use to rejuvenate the same. This can be easily done with the use of the stencil **10** of the present invention by merely placing said stencil **10** over the old marking and applying an overlayer of ink with the tube as described above.

As best shown in the enlarged FIG. 5 view, the indicia are made without any islands or crossovers that might otherwise hamper the movement of the nozzle **12** of the tube **11** along the indicia opening **13** during the marking operation.

FIG. 6 is a showing of one of spacers **20**, which is to fill in extra space in the composite displays shown in FIGS. 2 and 3. If desired, half-width spacers **20*a*** can be used to complete the display accurately in the stencil assembly **10**, **10*a*** and to allow variable spacing of the indicia in the display (note FIG. 3). In actual practice, only the stencil members **14** and the spacers **20**, **20*a*** required for the particular name and serial number are obtained from a common supply at the time of purchase of the kit.

The edges **23–26** are preformed with a plurality of spurs **30** projecting therefrom on the underneath side (see FIGS. 2 and 4). Such spurs **30** may be conveniently

formed by simply puncturing the edges **23–26** at multiple points with a sharp instrument and serve as a positioning means for the stencil assembly **10** when the same is used for marking a surface, such as the cloth C or the like, which can be penetrated. As the stencil assembly **10** is brought down in position on the surface, the cloth C is stretched outwardly from the marking area and then held by the spurs **30** so as to allow production of a completely wrinkle-free area to insure the formation of an attractive mark. In the case of woven cloth being marked on, the interstices of the cloth C are assured of being opened by a limited amount so as to be more readily penetrated by the marking material.

As best shown in FIG. 4, the stencil members **14** lie in a plane above the bottom of the supporting spurs **30**. This means that when in the marking position on the cloth C, said members **14** are spaced above the surface whereby the ink being applied is prevented from creeping laterally under the members **14** and causing a smear.

A modification of the system of the present invention is concerned with providing a reservoir tip **40**, which is attached to the nozzle **12** of the tube **11**, as shown in FIGS. 7 and 8. One advantage of providing the auxiliary reservoir tip **40** is to allow the selection of a different size dispensing orifice **41** and surrounding end face for spreading the material for making any desired width mark. Another important function of the reservoir tip **40** is to accommodate the initial flow of marking material from the tube **11** to insure against excess of material flowing onto the surface of the cloth C at the start of the marking operation. For example, during the manufacture of the tube **11**, the contents is packaged under pressure so that upon removal of the cap the marking material immediately begins to flow uncontrollably to form a deleterious glob. As can be seen in FIG. 8, with the reservoir tip **40** in use, this initial material is accommodated until the proper time for release and transfer to the surface as desired in response to manual pressure. Desirably, a matching overcap **42** may be provided to prevent the contents of the tube **11** from drying out between applications.

In FIGS. 9 and 10, there is illustrated the novel packaging concept of the stencil kit of the present invention. As shown in these figures, in addition to the tube of marking material **11**, an additional tube **11***a* of marking material of a different color is provided to give the kit capability for marking on different color surfaces. Positioned in cylindrical package **44** between the tubes **11**, **11***a* are the two stencil assemblies **10**, **10***a* which gives the multi-line capability for the name and serial number data as discussed with relation to FIGS. 2 and 3.

The package **44** and the contents are substantially the same length and said package is divided into lower and upper halves **45**, **46**, respectively. The lower half **45** is adapted to present the contents for easy access and hold the same in the upright position when the upper half **46** is removed. Extending around the upper portion of the bottom half **45** is an inwardly projecting rim **47** which serves to form an outwardly facing locking surface for frictional engagement with the lower portion of the upper half **46**. To protect the contents prior to use, the two halves **45**, **46** are connected together by a strip of tape **48** positioned around the juncture, as shown in FIG. 9.

An important feature of the package **44** lies in that the stencil assemblies **10**, **10***a* serve to bisect said package **44** into two compartments **50**, **51** (FIG. 10) which are adapted to receive the tubes **11**, **11***a*. The stencil assemblies **10**, **10***a* are substantially as wide as the package **44** measured at the rim **47** whereby the side edges of said stencil assemblies **10**, **10***a* are in juxtaposition to said rim **47** when in the package **44**. Because of this, the stencil assemblies **10**, **10***a* are held captive from sidewise movement (FIG. 10) and thereby are maintained in the upright position for easy access at all times. During the marking operation when one of the stencils **10**, **10***a* and one of the tubes **11**, **11***a* are removed there is no loss of the compartments **50**, **51** due to the maintenance of the blocking relationship of the remaining stencil. Thus, returning the stencil assembly **10**, **10***a* and the tube **11**, **11***a* being used to the package **44** in the proper position can be done without difficulty.

In summary, the method and apparatus of the present invention provides a system for marking indicia which can be carried out from start to finish in an efficient manner. The marking operation is performed by direct transfer of the ink from a reservoir requiring no intermediate transfer member such as a stamp pad or other conventional applicator. The efficient transfer of ink to the surface is accomplished by applying pressure to the material in the reservoir such that homogeneous markings are obtained which are highly legible and resistive to destruction. The construction of the stencil assembly **10** is such as to promote ease of use and because of the simplicity of said assembly it is also inexpensive to manufacture. Finally, the employment of the marking apparatus in kit form is enhanced by providing a package for storage of two tubes **11**, **11***a* of marking material and two stencil assemblies **10**, **10***a* in a compartmented package **44** utilizing the latter as the dividing partition for ease of access and return.

In this disclosure, there are shown and described only the preferred embodiments of the invention, but, as aforementioned, it is to be understood that the invention is capable of various changes or modifications within the scope of the inventive concept as expressed by the accompanying claims.

What is claimed is:

1. The method of marking indicia or the like on a surface comprising the steps of placing a stencil adjacent to said surface, moving the dispensing nozzle of a flexible tube of marking material along and in engagement with said surface while guiding said nozzle along and in engagement with the edge of said stencil outlining said indicia, and applying sufficient pressure to the sides of said tube to feed said material from said nozzle onto said surface to form said indicia.

2. The method of claim **1** wherein the surface is cloth having interstices therein, the pressure applied to said tube being sufficient to feed the material into said interstices.

3. The method of claim **1** wherein said marking material is applied in liquid form, said material having sufficient viscosity to permit controlled dispensing when said tube is inverted.

4. The method of claim **3** wherein said stencil is held at a predetermined distance above said surface to prevent lateral creeping of said material.

5. The method of claim **1** wherein said marking material is passed through a reservoir tip and feeding orifice of a predetermined size on said tube immediately prior to engaging said surface, whereby the initial and feeding flow of material may be regulated.

6. The method of claim **1** wherein said stencil is made up of a plurality of stencil members prior to placement with respect to said surface, said stencil members being held together to form a composite display for the marking operation.

7. The method of claim **1** wherein said surface is positively held in position with respect to said stencil during the marking operation.

8. The method of marking indicia or the like on a surface comprising the steps of placing a stencil guide adjacent said surface, moving a dispensing nozzle of a reservoir along and in engagement with said surface while guiding said nozzle along and in engagement with the edge of said guide outlining said indicia, and applying sufficient pressure to the material within said reservoir to feed said

material from said nozzle onto said surface to form said indicia.

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U.S. Cl. X.R.

118—301, 504; 161—97, 413; 206—47