March 15, 1966 W. S. MILLER 3,240,326

DISINFECTING PACKET

Filed Feb. 26, 1962

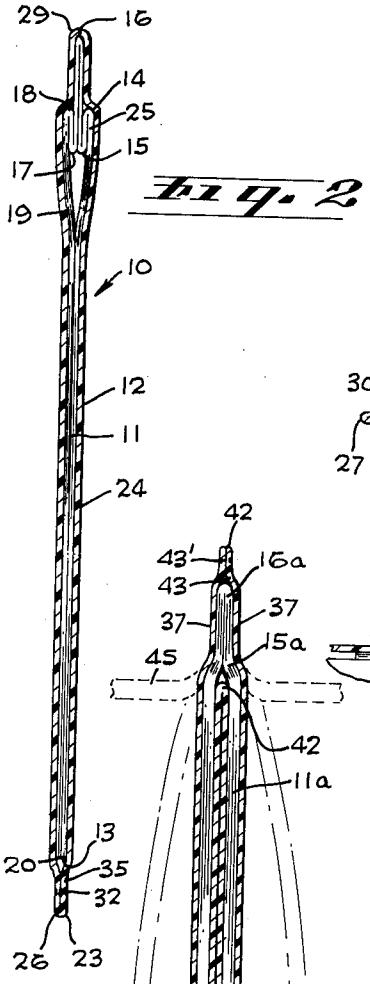


Fig. 2

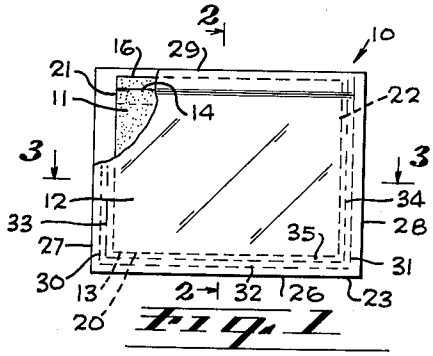


Fig. 1

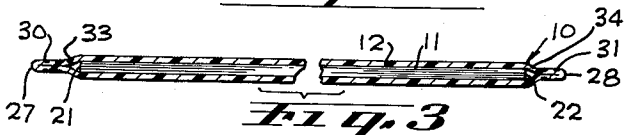


Fig. 3

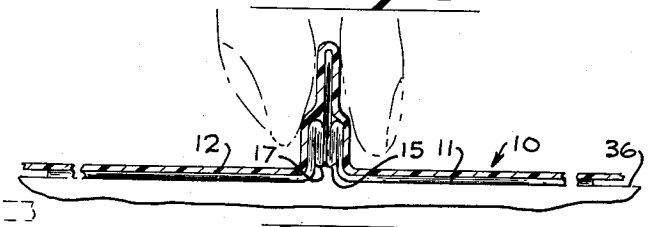


Fig. 4

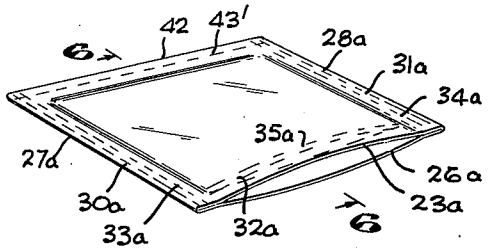


Fig. 5

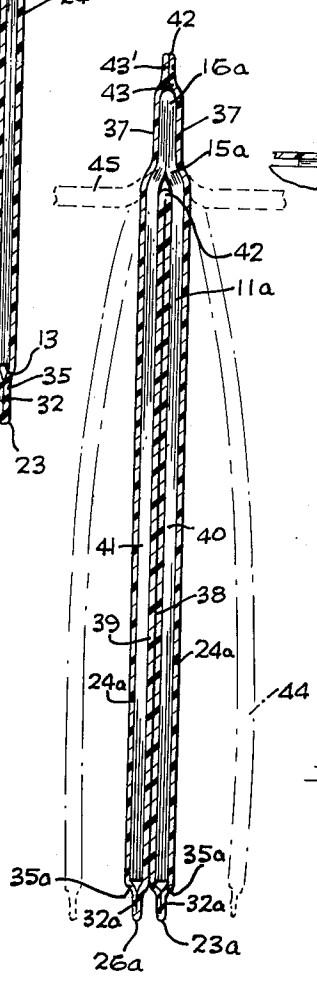


Fig. 6

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DISINFECTING PACKET

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This invention relates to an improved item to be used by an individual for sterilizing a toilet seat or other plumbing fixture or the like before use.

The general object of the invention is to provide a small toilet seat disinfecting package, which may be carried very conveniently in a person's pocket, and which is inexpensive enough that it may be discarded after a single use. Preferably, the item is sufficiently small and weak structurally to be discardable in the toilet itself, without danger of clogging the sewage lines. Also, the unit may be so constructed as to maintain its disinfecting element in completely sterile condition up to the time of use, while at the same time permitting very easy exposure of the element for contact with a work surface at the time of use.

A package embodying the invention includes a pad formed of sheet material and carrying a germicidal preparation capable of disinfecting the item to be treated. The pad is preferably formed of an easily water destructible absorbent material, this material for best results being a tissue paper, such as toilet paper, which is adapted to disintegrate into a large number of small pieces when placed in a body of water. The germicidal preparation may be a liquid which impregnates the tissue paper or other water destructible material, and is present in sufficient quantity to effect the desired disinfecting operation.

For protecting the sterilizing pad against contact with the atmosphere or other objects prior to use, I enclose this pad within an envelope formed of flexible sheet material which is impervious to air, moisture, and the germicidal preparation. This envelope may be formed of a suitable resinous plastic material, preferably polyethylene, with the material of the envelope being sufficiently weak and thin to enable it as well as the pad to be disposed of in a toilet. The envelope is predesigned for rapid opening, at the time of use, to expose the pad for contact with a work surface. For this purpose, the envelope may have a weakened area or areas along one or more of its edges, adapted to be torn in a manner exposing the pad. Also, it is found desirable that the pad have a portion which is impregnated with a strengthening or bonding material, preferably along one edge of the pad, acting to form a somewhat strengthened handle area by which the device may be gripped during a sterilizing operation. This bonding material may locally secure the envelope material to the inner pad, to further strengthen the device at the handle location. A highly effective strengthening or bonding material for this purpose is paraffin.

The above and other features and objects of the present invention will be better understood from the following detailed description of the typical embodiments illustrated in the accompanying drawings, in which:

FIG. 1 is an elevational view representing a first form of disinfecting packet made in accordance with the invention;

FIG. 2 is an enlarged section taken on line 2—2 of FIG. 1;

FIG. 3 is a section taken on line 3—3 of FIG. 1;

FIG. 4 represents fragmentarily the device of FIGS. 1 to 3, as it appears after opening, and during a disinfecting operation;

FIG. 5 is a perspective representation of a second form of disinfecting packet embodying the invention; and

FIG. 6 is an enlarged sectional view similar to FIG. 2, but showing the FIG. 5 device, and taken on line 6—6 of FIG. 5.

The disinfecting packet 10 illustrated in FIGS. 1 to 3 includes an inner pad 11 impregnated with a germicidal solution, and contained within an outer sealed protective envelope 12. This envelope may be formed of a number of identical coextensive sheets or layers of a tissue paper or other water destructible absorbent material, preferably the kind of tissue utilized as toilet paper. In the drawing, only two such sheets of tissue paper are illustrated, though it is to be understood that normally more than this number be employed, say for example, about four sheets. The sheets are of identical rectangular configuration, and are folded to the cross-sectional configuration illustrated in FIG. 2. More particularly, to describe that cross-section, the sheets may be considered as starting at a first edge 13, and extending upwardly therefrom to the location of a return bend portion 14 of the pad. At the location 14, the sheets of tissue paper are doubled back on themselves, to extend downwardly to the location of another return bend 15, at which the sheets extend upwardly to the location of a top return bend 16. At the top edge 16, the sheets are doubled back downwardly to a point 17, are then bent upwardly to a point 18, and then extend downwardly at 19 to a second lower edge 20 aligned laterally with and essentially coinciding with the edge 13 at which the description of the cross-section commenced.

This cross-section discussed in connection with FIG. 2 continues across the entire length of the pad 11, between two parallel end edges 21 and 22 (see FIG. 1), which edges 21 and 22 extend perpendicular to the bottom edges 13 and 20 of the pad, and the parallel top doubled edge 16.

Envelope 12 which extends about the pad 11 is formed of a very thin weak plastic material, which for best results has a thickness between about .0001 and 0.0025 inch. As stated previously, this envelope material is impervious to water, air, and the germicidal preparation contained within the envelope, and is sealed to effectively isolate pad 11 and the germicidal preparation from contact with the atmosphere or foreign objects. The optimum material for use in forming envelope 12 is presently thought to be polyethylene film, falling within the specified thickness range.

As will be apparent from the figures, envelope 12 may be formed from a single rectangular piece of sheet material, folded back at its upper edge to extend completely about the inner pad, and sufficiently large to project laterally beyond the edges of the pad, to completely protect it. More particularly, the film forming the envelope may be considered as commencing at the lower edge 23 (FIGS. 1 and 2), and extending upwardly therefrom along one side of pad 11, at 24, with the sheet material 12 extending upwardly past the multiple layer portion 25 of the pad and to its upper doubled edge 16, to then be doubled back and downwardly at the opposite side of the pad, and to a second lower edge 26 substantially coinciding with the first mentioned edge 23. Bottom edges 23 and 26 are parallel to and spaced beneath bottom edges 13 and 20 of the inner pad, while the side edges 27 and 28 of the envelope may be parallel to and spaced outwardly beyond the two side edges 21 and 22 of the pad.

To completely seal the packet, the edge portions of the two layers of the packet material are each sealed together, except at the location of a top doubled edge. More particularly, there are formed two parallel side heat-seal lines 30 and 31, extending downwardly from top edge 29 of the envelope to the location of a merging bottom heat-seal line 32. The side lines 30 and 31 are parallel to

side edges **21**, **22**, **27** and **28** of the pad and outer envelope, while bottom heat-seal line **32** extends parallel to bottom edges **13**, **20**, **23** and **26**. Also, it is preferable that the three heat-sealed edges of the device be weakened sufficiently to enable the sealed portions to be torn off of the rest of the envelope very easily, in order to open three edges of the envelope and expose the pad for use. This result may be attained very easily by merely forming the heat-seal lines **30**, **31** and **32** sufficiently deeply in the plastic material to render the envelope material considerably weaker along the seal lines than elsewhere. In lieu of this arrangement, additional thin or otherwise weakened areas may be provided in the plastic or other material of the envelope, adjacent and parallel to, but slightly inwardly of, the seal lines **30**, **31** and **32**, as represented at **33**, **34** and **35** respectively in FIGS. 1 and 2.

In order to facilitate gripping of the upper edge portion of the device of FIGS. 1 and 2, the portions of the tissue paper **11** vertically between top edge **16** and the edges designated **15** and **17** in FIG. 2 are impregnated with a material capable of somewhat strengthening or stiffening these upper edge portions of the pad, and acting to bond all of the various layers of the tissue pad in this area together. This impregnating material may also function to bond or secure the upper portions of the envelope **12**, vertically between the location of top edge **16** and the bottom edges **15** and **17**, to the contained upper edge portions of the pad, so that all of the various layers of tissue paper and outer covering material form together a somewhat stiff easily gripped upwardly projecting handle for the device. A preferred substance for serving this purpose is paraffin, or if desired a suitable low melting point polyethylene may be used.

The germicidal preparation which impregnates pad **11** may be a liquid, impregnating the pad continuously along its entire area between bottom edges **13** and **20** and the location of edges **15** and **17** in FIG. 2. A sufficient excess of this germicidal solution may be present to assure the presence of enough liquid to effectively disinfect an entire toilet seat or other article of corresponding size. The germicidal solution may be an appropriate alcohol-water mixture, typically containing also a small amount of a normally gaseous germicide such as beta-propiolactone or hexachlorophene. Two typical germicidal solutions useable in the invention are the following:

	Percent
Ethyl alcohol	70
Water	29
Beta-propiolactone	1
or	
Isopropyl alcohol	90
Water	9
Beta-propiolactone	1

Two additional examples of typical germicidal solutions useable in the present packet are the above solutions, with one percent hexachlorophene substituted for the beta-propiolactone.

In using the described packet of FIGS. 1 to 3, the first step is for the user to tear open the outer envelope **12** along the weakened areas **30**, **31** and **32**, or **33**, **34** and **35**. The user then grasps the upper paraffin impregnated relatively stiff edge or handle portion of the opened device, between his thumb and forefinger, as illustrated in FIG. 4. With his other hand, he may separate the two depending halves of the pad, and the corresponding portion of the envelope, so that the two halves project in opposite directions, as seen in FIG. 4. These two halves of the pad may then, in the illustrated opened position, be placed downwardly against a toilet seat or other object **36**, and rubbed along the surface of that object to bring all portions thereof into contact with the germicide, and thereby completely sterilize the seat. After use, the entire, packet **10** is thrown into the toilet, and may subsequently be flushed away. Because of the weak water destructible character of pad **11**, and the very weak type of material employed for constructing envelope **12**, all portions of the unit may be carried through the plumbing with no danger of clogging.

Reference is now made to the second form of the invention illustrated in FIGS. 5 and 6. In this form, the inner tissue paper pad **11***a* may be formed in much the same manner as in FIGS. 1 to 4, except that the pad of FIGS. 5 and 6 is typically illustrated as not having the multiple layer portion represented at **25** in FIG. 2. Instead, the pad **11***a* merely has a single return bend **16***a* at its upper edge. Between this upper edge **16***a* and a location **15***a*, the tissue paper is impregnated with paraffin, a low melting point polyethylene, or the like, acting to bond the different layers of the paper together and to adjacent portions **37** of the envelope **12***a*, to form an upper somewhat stiffened or strengthened handle or edge portion by which the device may be grasped in the manner illustrated in FIG. 4 in connection with the first form of the invention.

The outer envelope **12***a* may be considered as essentially the same as the envelope of FIGS. 1 to 3, except that the two parallel opposite side portions of the envelope do not terminate downwardly at bottom edges **23***a* and **26***a* (corresponding to edges **23** and **26** of FIG. 2), but instead are doubled back at these locations to extend upwardly at **38** and **39**, between the two halves **40** and **41** of the pad. The portions **38** and **39** may extend upwardly to an edge **42**, adjacent the point **15***a* of the pad, with the material of the two layers **38** and **39** actually being integral with one another, and merging together in a return bend at the location **42**. In order to enable the single piece of material to have the discussed return bends at **23***a*, **26***a* and **42**, this material of the envelope may have its terminal edges at a location **43** above upper edge **16***a* of the handle portion of the pad.

Across the top edges of the envelope material, the two layers of this material may be heat-sealed together along a line **43**; extending continuously between the opposite side edges **27***a* and **28***a* of the envelope. The two inner layers **38***a* and **39***a*, as well as the two outer layers **24***a* of the envelope material, may all extend laterally the entire distance to the mentioned side edges **27***a* and **28***a*. All four of these layers may be heat-sealed together along two parallel opposite side heat-seal lines **30***a* and **31***a*, and may be weakened along these lines or along adjacent areas **33***a* and **34***a*. Along the bottom edge of the envelope, the two layers which meet at return bend **23***a* may be heat-sealed together, along a line **32***a*, and these layers may be weakened along adjacent upper lines **35***a*, while the other two layers (which form return bend **26***a*) may be similarly heat-sealed together along a line **32***a* (but not sealed to the other layers which form edge **23***a*), and may be weakened along two lines **35***a*.

In using the device of FIG. 5, a person first may grasp the upper handle portion of the packet with one hand, and may then insert the forefinger of the other hand into the bottom of the packet, past edges **23***a* and **26***a* and into the inner pocket formed between layers **38** and **39** of the envelope material. Since the two layers which form bottom edge **23***a* are not sealed in any way to the layers which form edge **26***a*, these edges are easily separable, as illustrated in FIG. 5, to allow such insertion of the user's finger. The resulting somewhat spread condition of the device, in addition to being shown in FIG. 5, is also illustrated in broken lines at **44** in FIG. 6. After the user has thus inserted his finger into the inner pocket, he moves the finger rapidly toward edge **27***a*, and then in the opposite direction toward edge **28***a*, to tear the envelope material open along the two opposite tear lines **33***a* and **34***a*. Next, the bottom edges **23***a* and **26***a* may be pulled, to tear the bottom edge portions of the envelope open along tear lines **35***a*, so that inner envelope layers **38** and **39** may be pulled out of the device. The two halves **40** and **41** of the pad, carrying their impregnating germicidal solution, may then be separated in the manner

illustrated in FIG. 4 in connection with the first form of the invention, and as represented in broken lines at 45 in FIG. 6, for use in cleaning a toilet seat or other work surface.

I claim:

1. A packet for disinfecting a toilet seat or the like comprising a pad of tissue paper, a germicide carried by said pad, and a sealed envelope of flexible sheet material impervious to air, water and said germicide and extending about and enclosing said pad and sealing it against exposure to the atmosphere, said envelope being adapted to be opened to expose said pad for use in disinfecting said toilet seat, means bonding said tissue paper to said flexible sheet material of the envelope in a relation positively securing them together after opening of the envelope.

2. A packet for disinfecting a toilet seat or the like comprising a pad of tissue paper, a germicide carried by said pad, and a sealed envelope of flexible sheet material impervious to air, water and said germicide and extending about and enclosing said pad and sealing it against exposure to the atmosphere, said envelope being adapted to be opened to expose said pad for use in disinfecting said toilet seat, means bonding together and two said flexible sheet material a plurality of layers of said tissue paper at a handle location in a relation forming a handle by which the pad may be held while disinfecting the seat, said plurality of layers of tissue paper having portions projecting from said handle location and free to separate and extend in opposite directions from the handle during a disinfecting operation.

3. A packet for disinfecting a toilet seat or the like comprising a pad of tissue paper, a germicide carried by said pad, a sealed envelope of flexible sheet material impervious to air, water and said germicide and extending about and enclosing said pad and sealing it against exposure to the atmosphere, said envelope being adapted to be opened to expose said pad for use in disinfecting said toilet seat, there being a plurality of layers of said tissue paper, said fluid impervious flexible sheet material of the envelope having a portion extending between and forming a fluid impervious pocket between two layers of said tissue paper.

4. A packet for disinfecting a toilet seat or the like comprising a pad of tissue paper, a germicide carried by said pad, a sealed envelope of flexible sheet material impervious to air, water and said germicide and extending about and bonded to said pad and sealing it against exposure to the atmosphere, said envelope being adapted to be opened to expose said pad for use in disinfecting said toilet seat, there being a plurality of layers of said tissue paper, said flexible sheet material of the envelope having two layers received between two layers of said tissue paper and forming an inner pocket into which a person may insert a finger for tearing the envelope open, there being tear lines along different edges of said pocket for removal thereof.

5. A disinfecting packet comprising a pad formed of a plurality of sheets of porous material, a germicide liquid carried by and impregnating said pad, a sealed fluid tight envelope of flexible sheet material impervious to air, water and said germicide and extending about and enclosing said pad and said germicide and sealing them against exposure to the atmosphere, said envelope including two sheets of said flexible sealing material extending along and enclosing opposite sides respectively of the pad and peripherally secured together in sealing relation, said envelope having a first edge near which a user may grasp the envelope in use, and having tear line areas extending in a plurality of different directions along essentially a plurality of other edges of said envelope and at which said two flexible sheets may be torn

to a condition exposing said pad and freeing said sealing sheets for relative opening movement away from one another to positions of extension in essentially opposite directions while remaining attached at said first edge, and stiffening material locally impregnating said porous sheets along said first edge and bonding said porous sheets to said envelope material in a relation forming a stiffened handle along said first edge.

6. A disinfecting packet comprising a pad formed of a plurality of sheets of porous material, a germicide liquid carried by and impregnating said pad, and a sealed fluid tight envelope of flexible sheet material impervious to air, water and said germicide and extending about and enclosing said pad and said germicide and sealing them against exposure to the atmosphere, said envelope including two sheets of said flexible sealing material extending along and enclosing opposite sides respectively of the pad and peripherally secured together in sealing relation, said envelope having a first edge near which a user may grasp the envelope in use, and having tear line areas extending in a plurality of different directions along essentially a plurality of other edges of said envelope and at which said two flexible sheets may be torn to a condition exposing said pad and freeing said sealing sheets for relative opening movement away from one another to positions of extension in essentially opposite directions while remaining attached at said first edge, said other edges of the envelope including an edge essentially opposite said first edge, said envelope forming an inner fluid impervious pocket extending inwardly between two of said porous sheets from said opposite edge.

7. A disinfecting packet comprising a pad formed of a plurality of sheets of porous tissue paper, a germicide liquid carried by an impregnating said pad, a generally rectangular sealed fluid tight envelope of flexible resinous plastic sheet material impervious to air, water and said germicide and extending about and enclosing said pad and said germicide and sealing them against exposure to the atmosphere, said envelope including two sheets of said flexible sealing material extending along and enclosing opposite sides respectively of the pad and peripherally secured together in sealing relation, said envelope having a first edge near which a user may grasp the envelope in use, and having tear line areas extending in a plurality of different directions along essentially a plurality of other edges of said envelope and at which said two flexible sheets may be torn to a condition exposing said pad and freeing said sealing sheets for relative opening movement away from one another to positions of extension in essentially opposite directions while remaining attached at said first edge, and stiffening material locally impregnating said porous sheets along said first edge and bonding said porous sheets to said envelope material in a relation forming a stiffened handle along said first edge, said other edges of the envelope including an edge essentially opposite said first edge, said envelope forming an inner fluid impervious pocket extending inwardly between two of said porous sheets from said opposite edge and detachable from said two sealing sheets along some of said tear line areas.

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