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GB 1236343 A DE 003218480 A
US 6553712 A US 4523620 A

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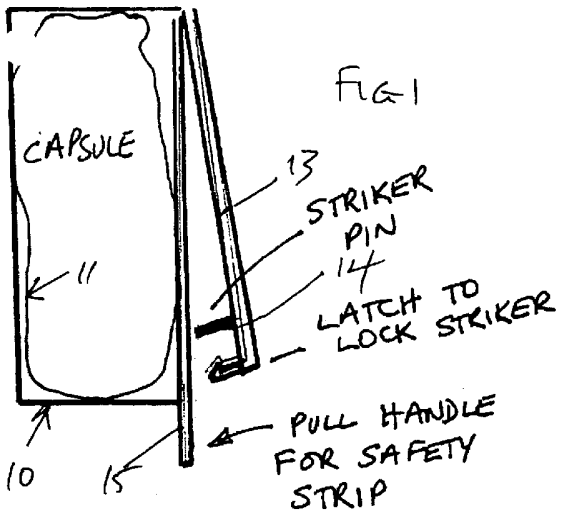
(54) Abstract Title: **A method of applying insecticide to an enclosed space**

(57) A method of applying insecticide to an enclosed space comprises:-providing a sealed pad impregnated with a liquid insecticide, placing the sealed pad within the enclosed space, and rupturing the sealing of the pad. Also claimed is a means for applying insecticide to an enclosed space comprising a sealed pad impregnated with liquid insecticide. The apparatus is used to apply insecticide to the inside of waste bins.



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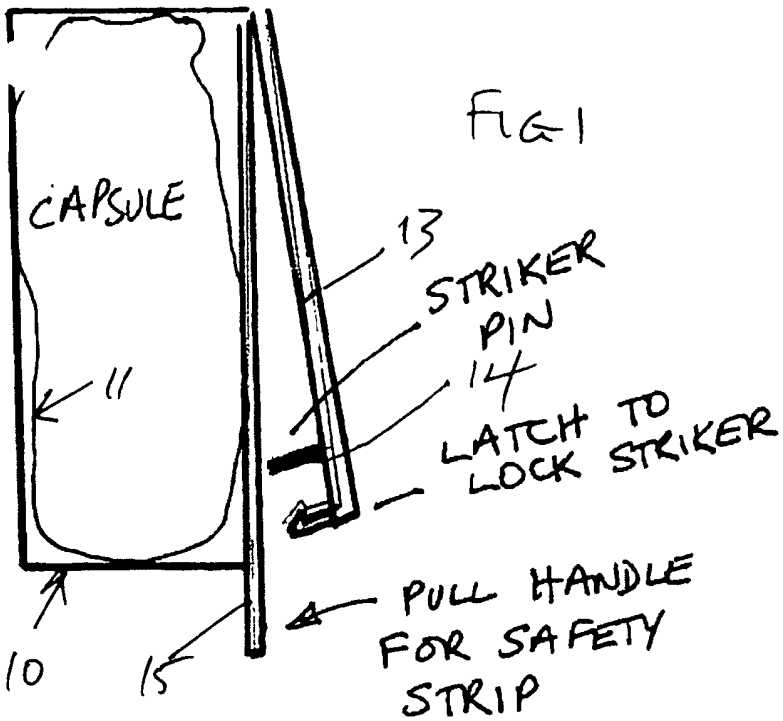


FIG 1

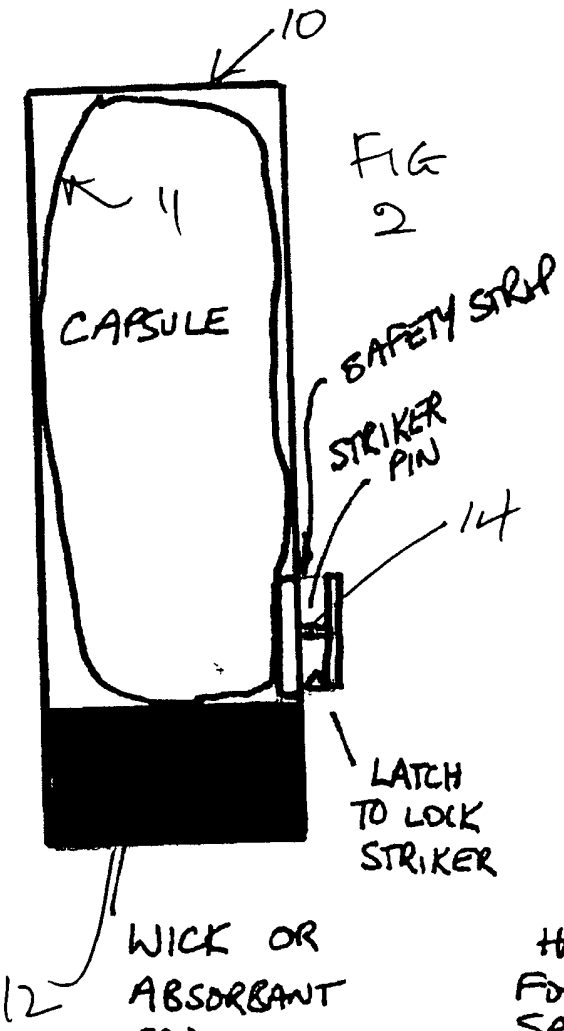


FIG 2

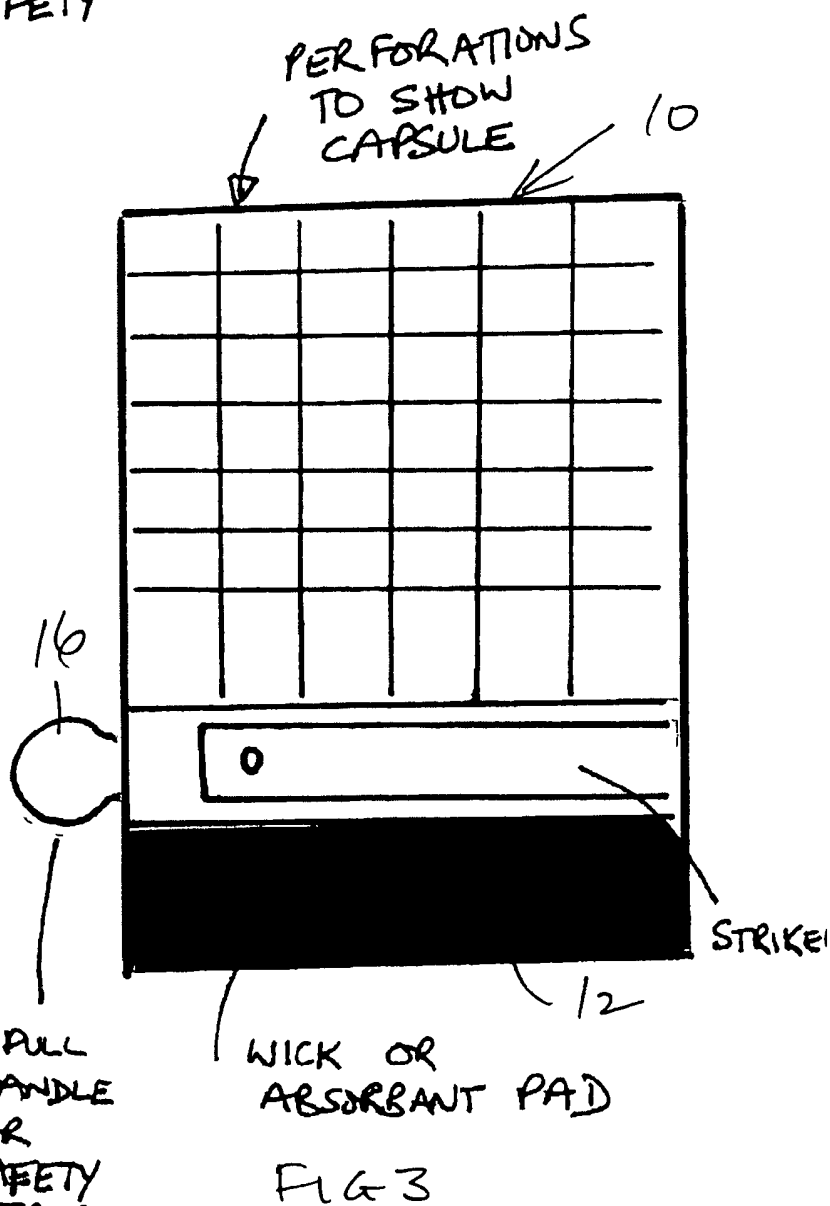


FIG 3

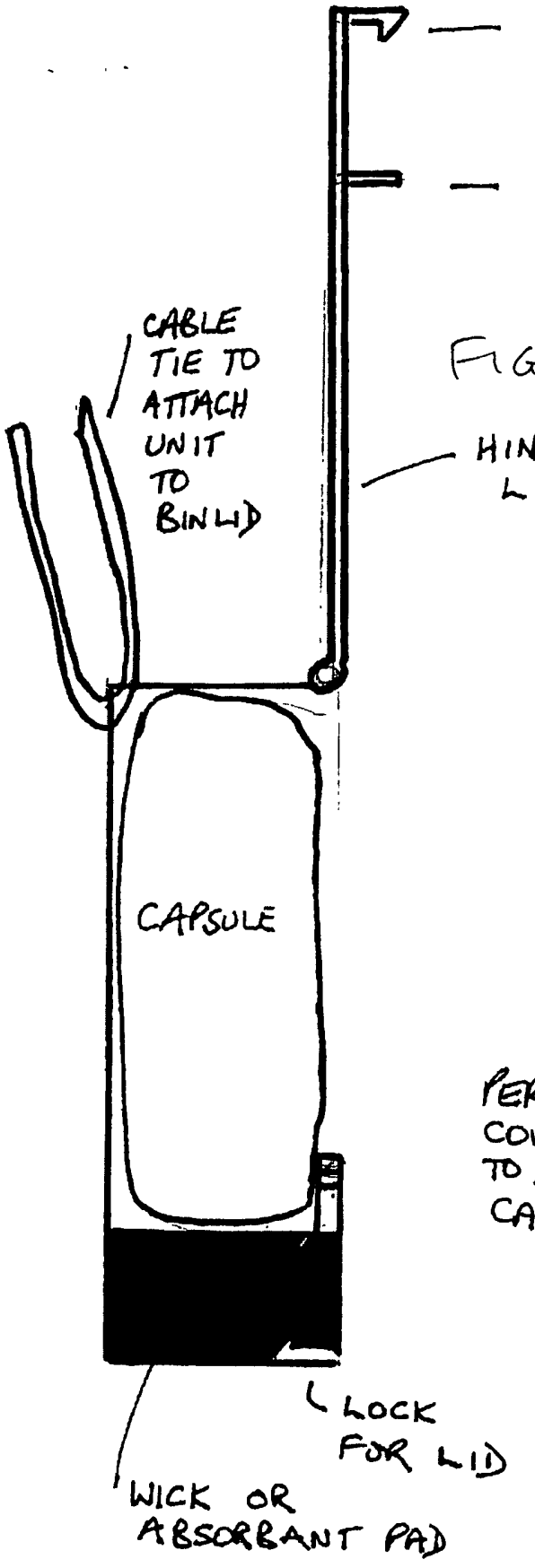
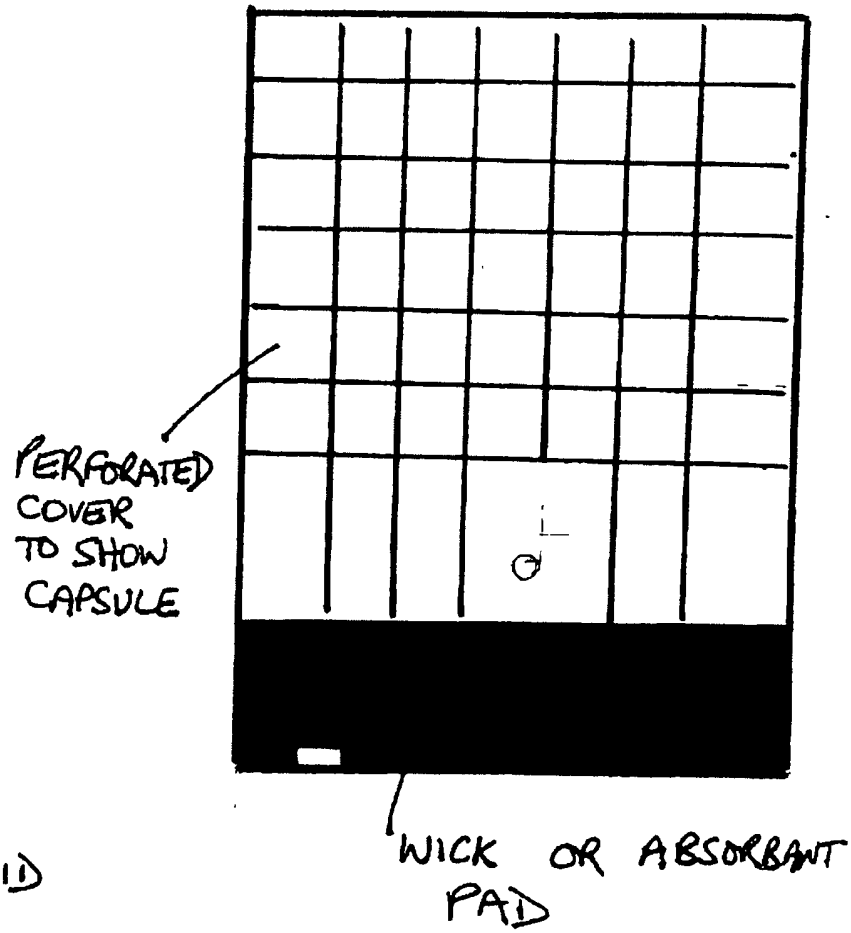
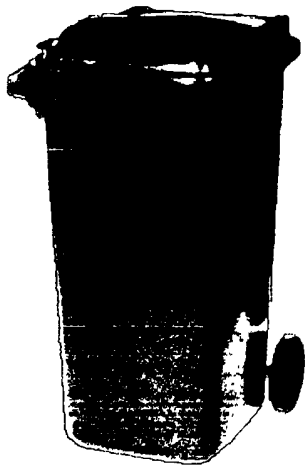


FIG. 4

FIG. 5 SHOWN CLOSED



Appendix A: Examples of wheeled bins



240 litre domestic bin

360 litre, 240 litre, 120 litre bins

1100 Litre Commercial & Industrial waste bin

2451585

A METHOD OF APPLYING INSECTICIDE TO ENCLOSED SPACE

Field of the Invention

This invention relates to the application of insecticides to enclosed spaces, for example, the interiors of bins, particularly wheeled bins such as are used for the collection and disposal of waste.

Wheeled bins are in widespread use throughout the UK, Europe, and the World for the collection of domestic, commercial and industrial waste. Bins range in size from 70 litres to 1300 litres and consist of a plastic or metal body with a plastic or metal lid. The lid is reasonably close-fitting although not gas-tight. Examples of bins are shown in Appendix A.

Insect problems identified with wheeled bins

The lid of a wheeled bin, particularly as it warps with age, provides enough gaps between it and the body of the bin to allow access by flying insects, particularly house flies (Musca domestica and Fannia canicularis) and blowflies (Calliphora sp.). These species may enter into the bin and lay eggs on waste material, or they may lay eggs on waste prior to it being deposited in the bin. In suitable weather conditions, these eggs may hatch into larvae ("Maggots") within a few days, and many householders find the presence of such maggots offensive. The presence of maggots can cause resistance to the compliance by the public with waste collection requirements and affect the ability of Local Authorities to meet re-cycling targets.

The normal procedure with many waste collection authorities has been to provide a weekly emptying service for the wheeled bins. Where this takes place there is little problem with maggots in the waste.

However, many waste authorities are now providing, and actively encouraging, the recycling of waste. This has led to·

1. The provision of wheeled bins for separate categories of waste. Where kitchen waste is concentrated in a bin intended solely to contain such material, there is an enhanced attraction for flies, as the waste is no longer masked by being wrapped in, or covered by, non-putrescible waste.

2. Because waste is now collected in separate bins, many waste collection authorities provide collections of the different waste fractions on alternate weeks. This means that a bin of kitchen waste may remain uncollected for up to 13 days. In such conditions, large numbers of maggots may be present in the bin, to the extent that they are seen to be escaping from the gap between the lid and the body of the bin.

3 Large wheeled bins, particularly those used by food premises, present a similar problem, even when collected weekly.

Inadequacy of current insecticides and application methods

There are a large number of insecticides readily available that will be lethal to flies and maggots. There are also well-established

methods of delivering these insecticides to the target area such as sprays, aerosols, dust guns, lacquer paints etc. None of these currently provide a solution to the problem.

Aerosols

Almost any readily available fly spray in an aerosol can will kill flies and maggots if the spray hits them. However, such a method requires the householder to spray the bin on a daily basis and, even then, the spray may not penetrate to eggs and maggots concealed deep within the refuse. Aerosols are relatively expensive for this type of work.

Sprays and dusts

The same disadvantage applies to sprays and dusts applied using professional equipment. If used by the residents, the capital cost of the equipment, and the safety considerations of storing and using sprays and dusts are considerable. If applied by a pest technician, the cost of time and travel to service every domestic bin on a regular basis is prohibitive. There may also be problems resulting from the accumulation of insecticide within the bin and waste with frequent dosing.

Lacquers

A band of insecticide lacquer painted on a surface provides effective control of crawling insects. However, such lacquers require relatively clean conditions to be effective. In dusty and dirty areas (such as the inside of a wheeled bin), the lacquer is rapidly rendered ineffective by becoming covered in a film of dirt and grease. The lacquer band is

also rapidly abraded by the action of waste being placed in the bin, and when the bin is emptied.

Current attempts to provide a solution to the problem

Current attempts to provide a means of dosing insecticide into a semi-enclosed space have a number of drawbacks or failings:

1. Dispensing units, which use battery power or the action of opening and closing a lid to work a dosing unit of some type are expensive, subject to mechanical failure, and very liable to breakage due to the rough handling that bins receive when being emptied. (Bins are hooked on to a lifting mechanism on the waste collection vehicle that lifts a bin vertically, inverts it over the hopper, and then shakes the bin or strikes the body of the bin against the vehicle to dislodge the refuse).

2. A proprietary unit known as "Binkill" uses a plastic strip impregnated with insecticide that is hung within the bin. The only pesticide which may be formulated in this manner is "Dichlorvos" and approval of this product in the UK was withdrawn a number of years ago due to concerns about the toxicity of the material. "Binkill" is not marketed in the UK.

3. A UK company, Repell Ltd, 25 Oakland Way, Flackwell Heath, High Wycombe, HP10 9ED has pesticide approval from HSE for a pad impregnated with Citronella which is intended to be placed in a wheeled bin. The product is marketed as Nu-Shine Wheelie Fresh. It should be noted that Citronella is a repellent, not an insecticide. It

may have some effect in deterring flies from entering the bin, but it will not provide any effect against those that do enter and lay eggs, nor will it control those maggots that hatch from eggs laid in the waste before it is deposited in the bin.

It is accordingly an object of the present invention to provide an improved method of disinfecting a bin or other enclosed space.

It is also an object of the present invention to provide an improved means for disinfecting a bin or other enclosed space.

Summary of the Invention

According to a first aspect of the present invention there is provided a method of applying insecticide to an enclosed space, the method comprising:-

providing a sealed pad impregnated with a liquid insecticide,

placing the sealed pad within the enclosed space, and

rupturing the sealing of the pad.

According to a second aspect of the present invention there is provided means for applying insecticide to an enclosed space, the applying means comprising a sealed pad impregnated with a liquid insecticide.

Brief Description of the Drawings

Figure 1 is a diagrammatic sectional view of a first form of disinfecting means,

Figure 2 is a diagrammatic sectional view of a second form of disinfecting means,

Figure 3 is a front view of the disinfecting means shown in Figure 2,

Figure 4 is a diagrammatic sectional view of a third form of disinfecting means, with the lid shown in its open position, and

Figure 5 is a front view of the disinfecting means shown in Figure 4.

Description of the Preferred Embodiments

The disinfecting means (dosing units) shown in the drawings and described below are the subject of co-pending Application No. 0620865.6, from which the present application has been divided. They overcome the drawbacks of existing methods and are designed to use pesticides that are approved for use in the UK. The dosing units applicable to dosing in any enclosed or semi-enclosed space in which the volume of air is relatively contained, of which a wheeled bin is only one example.

Each dosing unit is entirely self-contained and the active insecticide is contained in a sealed capsule which, if unopened, has a shelf life of many months. The unit does not start to operate until activated by the user. The unit can be made to contain any volume of insecticide (typically 25ml – 1000ml) the actual size being dependant on

the size of space to be treated, and the period of time for which it is desired that the unit shall function.

The dosing unit shown in Figure 1 consists of a container or housing 10 made of perforated plastic or metal, and within which is a capsule 11 containing a carrier liquid such as kerosene, alcohol, vegetable or synthetic oils in which an insecticide is dissolved or suspended. Suitable insecticides include natural and synthetic pyrethrins, and any other broad spectrum insecticide which will remain stable over a lengthy period when dissolved in the carrier. Such materials are already available from pesticide manufacturers and approved for use in the UK.

The dosing unit shown in Figures 2 and 3 is similar to that shown in Figure 1 except that, incorporated within the unit, there is a wick or absorbent pad 12. When the capsule 11 is punctured, a measured dose of insecticide is allowed to drip on to the wick or absorbent pad 12 from which the active ingredient disperses into the volume of the bin or other sealed or semi-sealed space. A latch 13 is pivotally mounted on the side of the housing 10 and the latch 13 carries an elongated striker pin 14 designed to pierce the wall of the capsule 11 when the latch 13 is pressed towards the capsule 11. A safety strip 15 having a pull handle 16 is attached to the side of the housing 10 to prevent inadvertent piercing of the capsule 11.

The measured dose of insecticide is controlled by the size of the hole made by the striker pin 14 when it penetrates the capsule 11. The capsule 11 is made of a transparent material, and the dosing unit contains either perforations or a window to allow the capsule 11 to be

seen. So long as liquid remains in the capsule 11, it is active. A dosing unit for a typical domestic wheeled bin is approximately 100mm x 75mm x 25mm thick.

The dosing unit shown in Figures 4 and 5 is supplied with a "cable tie" 17 or other fixing device to secure it to the bin. The cable tie 17 is passed through perforations of the unit and around the hinge of the lid of the bin, thus allowing the dosing unit to hang within the bin. Both the cable tie 17 and the dosing unit are simple enough and strong enough to withstand repeated strikes from waste being placed in the bin, and from the action of emptying the bin into the waste collection vehicle.

When the capsule 11 is empty, the tie 17 is cut or unclipped and the dosing unit placed in an appropriate waste bin for disposal. A new unit can then be fitted.

An alternative method of fitting the dosing unit is to fix it to the inside of the lid with a stud or pin. Such a fixing would be equally secure against dislodgement when the bin is emptied. However, many bins are the property of the waste collection authority, and they may object to residents drilling or puncturing the small fixing hole in the plastic lid.

Another alternative method of fitting the dosing unit would be to incorporate a docking unit within the lid into which the dosing unit may slide and be clipped in place. However, this method would probably require an amendment to BS/EN standards for wheeled bin dimensions, and this is a process that could take a number of years.

It is envisaged that the size of the disinfecting means (dosing unit) made available to domestic users will have an active life of about 1 - 4 weeks. The active life may be extended by the choice of insecticide or percentage of active ingredient in the carrier material.

The method of puncturing the capsule 11 is designed to prevent the householder from coming into contact with the pesticide, and does not require the provision of any tool or implement (thus avoiding the need to clean such a tool). The dosing unit can therefore be handled and activated without the need for protective clothing.

Two methods are suggested to puncture the capsule.

Method one - the dosing unit is constructed with a hinged lid 18 (as shown in Figure 4). Closing the lid 18 punctures the capsule 11 and locks the lid 18 in a permanently closed position by using a non-return plastic moulding or clip 19.

Method two – the dosing unit is fully assembled, with a striker containing a sharp pin 14 (as shown in Figures 1 and 2). The pin 14 is prevented from puncturing the capsule 11 by means of a safety strip 15. To activate the unit, the safety strip 15 is removed, and the striker pin 14 is pressed into the capsule 11.

The present invention is an alternative to the use of a capsule that is placed in a waste bin and then punctured. It comprises the use of a sealed pad impregnated with a liquid insecticide. The pad is placed in the bin and then the seal around the pad is punctured or otherwise removed.

Claims:-

1. A method of applying insecticide to an enclosed space, the method comprising:-

providing a sealed pad impregnated with a liquid insecticide,

placing the sealed pad within the enclosed space, and

rupturing the sealing of the pad.

2. Means for applying insecticide to an enclosed space, the disinfecting means comprising a sealed pad impregnated with a liquid insecticide.

UK Intellectual Property Office

For Creativity Innovation

Application No:	GB0814128.5	**Examiner:**	Mr Chris Archer
Claims searched:	1-2	**Date of search:**	26 November 2008

Patents Act 1977: Search Report under Section 17

Documents considered to be relevant:

Category	Relevant to claims	Identity of document and passage or figure of particular relevance
X	2	GB 1236343 A (GEIGY) see whole document.
X	1-2	US 6553712 A (MAJEROWSKI) see figures.
X	1	US 4523620 A (VON PHILIPP) see figures.
X	1	DE 3218480 A (SCHIMANSKI) see English abstracts attached and the figures.

Categories:

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art
Y	Document indicating lack of inventive step if combined with one or more other documents of same category	P	Document published on or after the declared priority date but before the filing date of this invention
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application

Field of Search:

Search of GB, EP, WO & US patent documents classified in the following areas of the UKC[X] :

Worldwide search of patent documents classified in the following areas of the IPC

A01M; A01N; A01P; A61L

The following online and other databases have been used in the preparation of this search report

WPI, EPODOC

International Classification:

Subclass	Subgroup	Valid From
A01M	0001/20	01/01/2006
A61L	0002/18	01/01/2006
A61L	0011/00	01/01/2006