Description

Drugs for injecting are conventionally supplied in glass ampoules which have a body and a stem with a constriction or neck in between which is readily fractured when pressure is applied to the neck by gripping the stem and the body independently and snapping the two parts away from each other, in order to provide access to the interior of the ampoule so that the contents can be drawn into a syringe. One significant problem is that when the ampoule is being broken apart there is a risk that the user might cut his hand on the jagged exposed glass surfaces, either during the process of breaking, or after the ampoule is broken. Also the opened ampoule has to be held in one hand whilst the syringe is manipulated with the other hand, and under some circumstances it might be of advantage for the ampoule to be able to stand in a stable manner so that both hands are freed.

The existing ampoule holder of U.S. Patent 2659253 comprises a sleeve, closed at both ends, and hinged at the centre. An ampoule can be dropped into one half of the opened sleeve so as to be fully contained within that half. When the holder is closed and inverted opening of the holder will cause the ampoule to be fractured. This device is cumbersome and the ampoule is only loosely held within the holder with a substantial amount of capability of movement within the holder. The holder is of substantial length in order to operate in the manner anticipated.

It is an object of this invention to alleviate the problems referred to above.

Accordingly this invention provides an ampoule holder adapted to contain a glass ampoule of the type having a body, a stem and an intermediate constriction or neck intended for fracture, the holder being in the form of a sleeve having a body portion shaped to receive the ampoule body and a head portion shaped to receive the stem of the ampoule, the body and head portions being joined by a hinge part allowing those two portions to be moved away from each other, such that the parts of an ampoule inserted into the holder will be protected whilst the stem and body of the ampoule are snapped away from each other, and wherein the body portion is formed with an open base for insertion of an ampoule, the opening in the base incorporating inwardly directed lugs or projections past which the lower end of an ampoule will be forced and which will act to retain the ampoule.

If an ampoule is inserted into such a holder much greater protection for the user is achieved since the glass itself is not gripped whilst the stem of the ampoule is being broken off. The interlinking of the head and body portions by the hinge enables the two parts of the ampoule to be kept together after breaking of the ampoule, if the head portion is specifically designed to retain the stem. As an alternative, however the hinge could be so designed that it can readily be broken as a later step, enabling the head containing the stem to be removed totally from the body of the ampoule. It is possible for the holder to be so designed as to provide a relatively stable base enabling the ampoule in its holder to be set up on a flat surface, thus freeing the hands of the user to manipulate the syringe. The stability of the holder could be increased by providing a detachable base plate to fit the base of the body portion.

Ideally the hinge part will be disposed diametrically opposite to a breakage link. This breakage link can be in the form of a narrow reduced-thickness portion of the holder joining the body portion to the head portion. The link will break when subjected to pressure sufficient to break off the stem part of the ampoule from its body.

The hinge part will ideally comprise at least one strip of flexible material of the holder joining the head portion to the body portion. In the preferred arrangement two spaced hinge strips are provided and a portion of material may extend from either the head portion or the body portion into the region between the two hinge strips. This depending portion of material provides added protection for the user in minimizing the possibility of the user's fingers getting into contact with the glass ampoule. It is of advantage to provide that the or each hinge strip extends into a cut-away section at the end of the head portion and/or the body portion. The extension of the hinge strips in this way allows for greater movement of the head portion away from the body portion to allow good access to the interior of the ampoule through the broken neck.

In an alternative construction the hinge part can comprise a pair of flexible arms positioned generally diametrically opposite to one another. Ideally these flexible arms are interconnected between the respective top ends of the body and head portions, so that the head portion can be moved bodily away from body portion. The flexible arms are advantageously of concertina formation.

Ideally at least the hinge portion of the holder will be formed from a material having a good static memory (for example a styrene blend) so that the hinge strips will stay in the new position when the head portion is bent back to expose the opened ampoule. It is advantageous for the head portion to incorporate internal ribs to grip the stem of the ampoule to ensure that the ampoule is correctly positioned within the holder so that the neck of the ampoule is aligned with or just above the hinge part (and the breakage link, when present) of the holder and so that the stem of the ampoule will not

fall out when the ampoule is broken open. Preferably these ribs will extend longitudinally of the head portion and will be so formed that the inner surfaces of the ribs are generally parallel to one another along their length. This avoids the stem of the ampoule being squeezed outwardly of the head portion of the holder.

Finger grip surface portions can be provided on the outer surface of the head portion and/or the body portion. The base of the holder may advantageously incorporate a detachable base plate to increase the stability of the holder when it is set on its base.

The invention may be performed in various ways and preferred embodiments thereof will now be described with reference to the accompanying drawings, in which:-

Figure 1 is a vertical section through a preferred form of ampoule holder of this invention;

Figures 2 and 3 are rear and front views respectively of the top part of the holder shown in Figure 1;

Figure 4 is a detail of a modification of the parts illustrated in Figure 2;

Figure 5 is a section on line III-III of Figure 1;

Figure 6 is an underneath plan view of the holder of Figure 1;

Figure 7 is an illustration of a base plate to be used with the holder of Figure 1; and

Figure 8 illustrates a further embodiment of an ampoule holder of the invention.

The ampoule holder shown in Figures 1 to 3 comprises a body part 1 and a head part 2 which are connected together by a pair of hinge strips 3 and a breakage link 4. The breakage link 4 comprises a reduced thickness portion of the material from which the holder is constructed and is shaped as illustrated in Figure 1. The hinge strips 3 extend down into a cut-away section 5 of the body part 1. In use, a glass ampoule 7 is inserted, stem first, through an opening 6 in the base of the body portion 1 and the body of the ampoule is forced past inwardly extending projections 8 (see also Figure 6) until the lower end of the ampoule snaps past these projections. The stem 10 of the ampoule is gripped within the head portion 2 of the holder by internal ribs or spines 11. As a result the ampoule is retained within the holder so that the neck 9 of the ampoule is aligned with or is just above the breakage link 4. Although the head portion 2 of the holder tapers inwardly towards its closed end the ribs 11 are so formed that their inner surfaces remain parallel to one another throughout their length. There is then no squeezing action tending to force the stem 10 of the ampoule out of the head portion 2 of the holder.

The ampoule is pushed up until the shoulder at the top of the body of the ampoule 7 abuts against the curved hinge parts 3. The base of the ampoule will then be raised above the projections 8.

In order to achieve access to the contents of the ampoule the holder is gripped in two hands and pressure is applied to a finger grip surface 13 of the head portion of the holder so that the breakage link 4 is fractured and the stem 10 of the ampoule is broken off at the neck 9 whilst the head portion 2 is folded back by means of the hinge strips 3. These hinge strips (and indeed the rest of the ampoule holder) are formed from a styrene blend material which has a good static memory so that when the hinge is bent into a new position it will hold the head portion 2 away from the open neck of the ampoule 7, thus providing clear access to the contents of the ampoule. After fracture the body portion of the ampoule 7 will drop down onto the projections 8, so that the rough broken glass edge will drop below the top of the body part 1, for added protection of the user. The ampoule holder can be set on a flat surface by means of its flat base 14. For added stability a detachable base plate 15 (Figure 7) could be provided, into which the base of the ampoule holder will be fitted.

As shown in Figure 4 the hinge area of the ampoule holder could be modified to incorporate a "paddle" 16 between the hinge strips 3. This enables the hinge strips to be spaced well apart whilst protecting the user still further from the broken glass portions of the ampoule 7.

The modified form of ampoule holder shown in Figure 8 has the head part 2 connected to the body part 1 by means of a pair of flexible, concertina-shaped, arms 17. These arms 17 are connected to the respective top ends of the body part 1 and the head part 2. The arms 17 will normally hold the head and body parts in general alignment, but pressure may be applied to between the head and body parts to cause the neck of an ampoule within the holder to be fractured. The head part, enclosing the stem of the ampoule, can then be moved to one side by means of the flexible arms 17 to provide access to the interior of the body of the ampoule.

Claims

1. An ampoule holder adapted to contain a glass ampoule (7) of the type having a body, a stem (10) and an intermediate constriction or neck (9) intended for fracture, the holder being in the form of a sleeve having a body portion (1) shaped to receive the ampoule body and a head portion (2) shaped to receive the stem of the ampoule, the body and head portions being joined by a hinge part (3) allowing those two portions to be moved away from each other, such that the parts of an ampoule in-

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serted into the holder will be protected whilst the stem and body of the ampoule are snapped away from each other, characterised in that the body portion (1) is formed with an open base for insertion of an ampoule, the opening (6) in the base incorporating inwardly directed lugs or projections (8) past which the lower end of an ampoule will be forced and which will act to retain the ampoule.

2. An ampoule holder according to Claim 1, further characterised in that a breakage link (4) is provided between the body and head portions at a position diametrically opposite to the hinge part (3), the breakage link preferably being a narrow reduced-thickness portion of the holder joining the body portion to the head portion.

3. An ampoule holder according to Claim 1, further characterised in that the hinge part comprises at least one strip (3) of flexible material of the holder joining the head portion to the body portion.

4. An ampoule holder according to Claim 3, further characterised in that two spaced hinge strips (3) are provided and a portion of material (16) extends from either the head portion (2) or the body portion (1) into the region between the two hinge strips.

5. An ampoule holder according to Claim 3 or Claim 4, further characterised in that the or each hinge strip (3) extends into a cut-away section at the end of the head portion and/or the body portion.

6. An ampoule holder according to Claim 1, further characterised in that the hinge part comprises a pair of flexible arms (17) positioned generally diametrically opposite to one another, the flexible arms preferably being interconnected between the respective top ends of the body and head portions, and ideally being of concertina formation.

7. An ampoule holder according to any one of Claims 1 to 6, further characterised in that at least the hinge portion (3) is formed from a material having a good static memory.

8. An ampoule holder according to any one of Claims 1 to 7, further characterised in that the head portion (2) incorporates internal ribs (11) to grip the stem of the ampoule, the ribs preferably extending longitudinally of the head portion and being so formed that the inner surfaces of the ribs are generally parallel to one another along their length.

9. An ampoule holder according to any one of Claims 1 to 8, further characterised by a detachable base plate (15) for the base of the holder to increase the stability of the holder when it is set on its base, and/or a finger grip surface portion (13) provided on the outer surface of the head portion and/or the body portion.

Patentansprüche

1. Ampullenhalter, der dazu ausgebildet ist, eine Glasampulle (7) mit einem Kolben, einem Schaft (10) und einer dazwischen liegenden, zu zerbrechenden Einschnürung oder einem Hals (9) aufzunehmen, und der die Form einer Hülse hat, mit einem Kolbenteil (1), der so geformt ist, daß er den Kolben der Ampulle aufnehmen kann, und einem Kopfteil (2), der so geformt ist, daß er den Schaft der Ampulle aufnehmen kann, wobei Kolben- und Kopfteil durch ein Scharnier (3) verbunden sind, das es gestattet diese beiden Teile auseinander zu bewegen, so daß die Teile einer in den Halter eingeführten Ampulle geschützt werden, während der Schaft und Kolben der Ampulle auseinandergesprengt werden, dadurch gekennzeichnet, daß der Kolbenteil (1) mit einem offenen Boden zum Einführen einer Ampulle versehen ist und die Öffnung (6) in dem Boden einwärts gerichtete Nasen oder Vorsprünge (8) aufweist, an denen das untere Ende einer Ampulle vorbeigedrückt wird und die die Ampulle halten.

2. Ampullenhalter nach Anspruch 1, dadurch gekennzeichnet, daß eine Sollbruchstelle (4) zwischen dem Kolbenteil und dem Kopfteil in einer dem Scharnier (3) diametral gegenüberliegende Position angeordnet ist, wobei die Sollbruchstelle vorzugsweise ein schmaler Bereich des Halters mit verminderter Dicke ist, der den Kolbenteil mit dem Kopfteil verbindet.

3. Ampullenhalter nach Anspruch 1, dadurch gekennzeichnet, daß das Scharnier wenigstens einen Streifen (3) aus flexiblem Material des Halters aufweist, der den Kopfteil mit dem Kolbenteil verbindet.

4. Ampullenhalter nach Anspruch 3, dadurch gekennzeichnet, daß zwei zueinander beabstandete Scharnierstreifen (3) vorgesehen sind und ein Materialstreifen (16) sich entweder von dem Kopfteil (2) oder dem Kolbenteil (1) aus in

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den Bereich zwischen den beiden Scharnierstreifen erstreckt.

5. Ampullenhalter nach Anspruch 3 oder 4, dadurch gekennzeichnet, daß der oder jeder Scharnierstreifen (3) sich in einen ausgenommenen Bereich am Ende des Kopfteils und/oder des Kolbenteils erstreckt.

6. Ampullenhalter nach Anspruch 1, dadurch gekennzeichnet, daß das Scharnier zwei flexible Arme (17) aufweist, die generell gegenüberliegend zueinander angeordnet sind und vorzugsweise die jeweiligen oberen Enden der Kolbenteils und des Kopfteils verbinden und im Idealfall zieharmonikaförmig sind.

7. Ampullenhalter nach einem der Ansprüche 1 bis 6, dadurch gekennzeichnet, daß zumindest das Scharnier (3) aus einem Material mit guten statischen Memory-Eigenschaften besteht.

8. Ampullenhalter nach einem der Ansprüche 1 bis 7, dadurch gekennzeichnet, daß der Kopfteil (2) innere Rippen (11) zum Erfassen des Schaftes der Ampulle aufweist, welche Rippen sich vorzugsweise in Längsrichtung des Kopfteils erstrecken und so gestaltet sind, daß ihre inneren Oberflächen auf ihrer gesamten Länge im wesentlichen parallel zueinander sind.

9. Ampullenhalter nach einem der Ansprüche 1 bis 8, gekennzeichnet durch eine lösbare Grundplatte (15) für den Boden des Halters, zur Erhöhung der Stabilität des Halters, wenn er auf seinen Boden aufgestellt ist, und/oder einen Fingergriff-Oberflächenbereich (13), der an der äußeren Oberfläche des Kopfteils und/oder des Kolbenteils vorgesehen ist.

Revendications

1. Support d'ampoule conçu pour contenir une ampoule (7) de verre du type ayant un corps, une tige (10) et un étranglement ou col intermédiaire (9) permettant de casser l'ampoule, le support se présentant sous la forme d'un manchon ayant une partie formant corps (1) d'une forme permettant de loger le corps d'ampoule et une partie formant tête (2) d'une forme permettant de loger la tige de l'ampoule, les parties formant corps et tête étant reliées par une partie formant charnière (3) permettant à ces deux parties d'être éloignées l'une de l'autre, de façon que les parties d'une ampoule introduite dans le support soient protégées au moment où la tige et le corps de l'ampoule sont séparés l'un de l'autre par rupture, caractérisé en ce que la partie formant corps (1) comporte une base ouverte pour l'insertion d'une ampoule, l'ouverture (6) de la base étant pourvue de pattes ou saillies (8) orientées vers l'intérieur, au-delà desquelles on force à passer l'extrémité inférieure d'une ampoule et qui servent à retenir l'ampoule.

2. Support d'ampoule selon la revendication 1, caractérisé en outre en ce qu'une liaison brisable (4) est prévue entre les parties corps et tête dans une position diamétralement opposée à la partie formant charnière (3), la liaison brisable étant de préférence une partie étroite du corps, d'épaisseur réduite, reliant la partie formant corps à la partie formant tête.

3. Support d'ampoule selon la revendication 1, caractérisé en outre en ce que la partie formant charnière comporte au moins une bande (3) de matière flexible du support reliant la partie formant tête à la partie formant corps.

4. Support d'ampoule selon la revendication 3, caractérisé en outre en ce que deux bandes-charnières espacées (3) sont présentes et une partie de matière (16) s'étend depuis la partie formant tête (2) ou la partie formant corps (1) jusque dans la région située entre les deux bandes-charnières.

5. Support d'ampoule selon la revendication 3 ou la revendication 4, caractérisé en outre en ce que la bande ou chaque bande-charnière (3) s'étend jusque dans une partie découpée à l'extrémité de la partie formant tête et/ou de la partie formant corps.

6. Support d'ampoule selon la revendication 1, caractérisé en outre en ce que la partie formant charnière comporte une paire de bras flexibles (17) disposés globalement diamétralement opposés l'un par rapport à l'autre, les bras flexibles étant de préférence reliés l'un à l'autre entre les extrémités supérieures respectives des parties formant corps et tête, et présentant idéalement une forme en accordéon.

7. Support d'ampoule selon l'une quelconque des revendications 1 à 6, caractérisé en outre en ce qu'au moins la partie formant charnière (3) est en matière à bonne mémoire statique.

8. Support d'ampoule selon l'une quelconque des revendications 1 à 7, caractérisé en outre en ce que la partie formant tête (2) comporte des nervures internes (11) pour saisir la tige de l'ampoule, les nervures s'étendant de préféren-

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ce dans le sens longitudinal de la partie formant tête et étant formées de façon que les surfaces intérieures des nervures soient globalement parallèles les unes aux autres sur leur longueur.

9. Support d'ampoule selon l'une quelconque des revendications 1 à 8, caractérisé en outre par une plaque basale amovible (15) pour la base du support afin d'accroître la stabilité du support lorsqu'il est posé sur sa base, et/ou une partie formant surface d'appui de doigt (13) réalisée sur la surface extérieure de la partie formant tête et/ou de la partie formant corps.