Abstract: An anti-needlestick system is provided comprising a housing assembly. The assembly has a body portion. The body portion has distal and proximal ends, a cylindrical extent, and upper and lower sections. The distal end has a first aperture. The proximal end has a second aperture. The upper section has a lower edge and the lower section has an upper edge. A pair of flexible hinge portions is provided. The upper ends are coupled to the upper section. The lower ends are coupled to the lower section. The hinge portions are adapted to allow movement between closed and open orientations. Handling elements are formed with the main body portion. The handling elements include an upwardly extending projection located on the upper section essentially coplanar with the distal end to facilitate one handed utilization of the system.
DESCRIPTION

ANTI-NEEDLESTICK SYSTEM

Technical Field

The present invention relates to an anti-needlestick system and more particularly pertains to shielding a needle immediately as it is withdrawn from a patient, the shielding being in a safe, convenient and economical manner.

Background Art

The use of needle systems of known designs and configurations is known in the prior art. More specifically, needle systems of known designs and configurations previously devised and utilized for the purpose of shielding needles through known methods and apparatuses are known to consist basically of familiar, expected, and obvious structural configurations, notwithstanding the myriad of designs encompassed by the crowded prior art which has been developed for the fulfillment of countless objectives and requirements.

By way of example, U.S. Patent Number 5,266,072 issued November 30, 1993 to Utterberg relates to a Guarded Winged Needle Assembly.

While this device fulfills particular objectives and requirements, the aforementioned patent does not describe an anti-needlestick system that allows for shielding a needle immediately as it is withdrawn from a patient, the shielding being in a safe, convenient and economical manner.

In this respect, the anti-needlestick system according to the present invention substantially departs from the conventional concepts and designs of the prior art, and in doing so provides an
apparatus primarily developed for the purpose of shielding a needle immediately as it is withdrawn from a patient, the shielding being in a safe, convenient and economical manner.

Therefore, it can be appreciated that there exists a continuing need for a new and improved anti-needlestick system which can be used for shielding a needle immediately as it is withdrawn from a patient, the shielding being in a safe, convenient and economical manner. In this regard, the present invention substantially fulfills this need.

**Disclosure of Invention**

**Technical Problem**

In view of the foregoing disadvantages inherent in the known types of needle systems of known designs and configurations now present in the prior art, the present invention provides an improved anti-needlestick system. As such, the general purpose of the present invention, which will be described subsequently in greater detail, is to provide a new and improved anti-needlestick system and method which has all the advantages of the prior art and none of the disadvantages.

It is therefore an object of the present invention to provide a new and improved anti-needlestick system which has all of the advantages of the prior art needle systems of known designs and configurations and none of the disadvantages.

It is another object of the present invention to provide a new and improved anti-needlestick system which may be easily and efficiently manufactured and marketed.
It is further object of the present invention to provide a new and improved anti-needlestick system which is of durable and reliable constructions.

An even further object of the present invention is to provide a new and improved anti-needlestick system which is susceptible of a low cost of manufacture with regard to both materials and labor, and which accordingly is then susceptible of low prices of sale to the consuming public, thereby making such anti-needlestick system economically available to the buying public.

Even still another object of the present invention is to provide an anti-needlestick system for shielding a needle immediately as it is withdrawn from a patient, the shielding being in a safe, convenient and economical manner.

Lastly, it is an object of the present invention to provide a new and improved anti-needlestick system. A housing assembly has a body portion. The body portion has distal and proximal ends, a cylindrical extent, and upper and lower sections. The distal end has a first aperture. The proximal end has a second aperture. The upper section has a lower edge and the lower section has an upper edge. A pair of flexible hinge portions is provided. The upper ends are coupled to the upper section. The lower ends are coupled to the lower section. The hinge portions are adapted to allow movement between closed and open orientations. Handling elements are formed with the main body portion. The handling elements include an upwardly extending projection located on the upper section essentially coplanar with the distal end to facilitate one handed utilization of the system.
To attain this, the present invention essentially comprises an anti-needlestick system. First provided is a housing assembly. The housing assembly has a main body portion. The main body portion has a distal end. The distal end has a first aperture. The main body portion has a proximal end. The proximal end has a second aperture. The main body portion has a cylindrical extent. The cylindrical extent is in a generally rectangular exterior cross sectional configuration over the majority of its length between the distal and proximal ends. The main body portion has a semi-cylindrical upper section. The upper section has a lower edge. The upper section has a semi-cylindrical lower section. The lower section has an upper edge. The main body section has a pair of flexible hinge portions. The upper ends of the hinge portions are coupled to the upper section at the distal end. The lower ends of the hinge portions are coupled to the lower section at the distal end. The hinge portions are adapted to allow movement of the halves between a closed operative orientation and an open inoperative orientation. In this closed operative orientation the upper and lower edges are provided in contact in a horizontal plane. In this manner the main body portion is formed into a cylinder with a circular cross section. In the open inoperative orientation the upper and lower edges are provided out of contact and spaced from each other. The hinge portions are located on opposite sides of the first aperture.

Handling elements are provided. The handling elements are formed with the main body portion. The handling elements include an upwardly extending flange projection. The upwardly extending flange
projection is provided on the upper section coplanar with the distal end. The handling elements include a plurality of laterally extending non-slip recesses. The laterally extending non-slip recesses are provided on the upper section proximally of the upwardly extending flange projection. The handling elements also include outwardly extending female projections. The outwardly extending female projects are provided on the upper section adjacent to the proximal end. The handling elements include male projections. The male projections extend upwardly from the lower section. The male projections are provided in a co-operable relationship with the female projection. In this manner the sections are releasably secured together in the closed orientation.

Provided next is a needle assembly. The needle assembly has a cylindrical hollow hub. The hub has a distal end. The hub has a proximal end. The hub is slidably positioned within the housing assembly. The hub has flat laterally extending wings. The needle assembly includes a needle. The needle is coupled to the distal end of the hub. The needle is slidably received in the first aperture. The needle assembly includes a flexible tube. The flexible tube is coupled to the proximal end of the hub. The flexible tube is slidably received in the second aperture. The needle assembly includes a cover. The cover is removably positioned over the needle when in the extended orientation.

Provided last are guides. The guides are formed in the edges of the sections. The guides include a primary recess. The primary recess is formed in the upper edge of the lower section between a forward end proximally of the upwardly extending flange projection
and a rearward end distally of the male and female projections. The guides include a forward recess. The forward recess is formed in the lower edge of the upper section proximally of the forward end of the primary recess. The guides also include an abutment surface. The abutment surface is formed in the lower edge of the upper section distally of the rearward end of the primary recess. The wings are adapted to extend laterally from the hub through the primary recess at an extended orientation. The majority of the needle extends distally of the main body portion. The forward recess assists in retaining the needle in the extended orientation. The wings are adapted to extend laterally from the hub through the primary recess at a retracted orientation. In the retracted orientation the entirety of the needle is provided totally within the main body portion. The abutment surface assists in retaining the needle in the retracted orientation. The needle assembly includes the needle. The needle is adapted to be moved from the extended orientation to the retracted orientation by a user sliding the wings within the primary recess.

There has thus been outlined, rather broadly, the more important features of the invention in order that the detailed description thereof that follows may be better understood and in order that the present contribution to the art may be better appreciated. There are, of course, additional features of the invention that will be described hereinafter and which will form the subject matter of the claims attached.

In this respect, before explaining at least one embodiment of the invention in detail, it is to be understood that the invention is not limited in its application to the details of construction and
to the arrangements of the components set forth in the following description or illustrated in the drawings. The invention is capable of other embodiments and of being practiced and carried out in various ways. Also, it is to be understood that the phraseology and terminology employed herein are for the purpose of descriptions and should not be regarded as limiting.

As such, those skilled in the art will appreciate that the conception, upon which this disclosure is based, may readily be utilized as a basis for the designing of other structures, methods and systems for carrying out the several purposes of the present invention. It is important, therefore, that the claims be regarded as including such equivalent constructions insofar as they do not depart from the spirit and scope of the present invention.

These together with other objects of the invention, along with the various features of novelty which characterize the invention, are pointed out with particularity in the claims annexed to and forming a part of this disclosure. For a better understanding of the invention, its operating advantages and the specific objects attained by its uses, reference should be made to the accompanying drawings and descriptive matter in which there are illustrated preferred embodiments of the invention.

**Advantageous Effects**

According to the present invention it is provided a new and improved anti-needlestick system which is easily and efficiently manufactured and marketed.
According to the present invention it is also provided a new and improved anti-needlestick system which is of durable and reliable constructions.

According to the present invention it is also provided a new and improved anti-needlestick system which is susceptible of a low cost of manufacture with regard to both materials and labor, thereby making such anti-needlestick system economically available to the buying public.

According to the present invention it is also provided an anti-needlestick system for shielding a needle immediately as it is withdrawn from a patient, the shielding being in a safe, convenient and economical manner.

**Brief Description of the Drawings**

Figure 1 is a plan view of an anti-needlestick system constructed in accordance with the principles of the present invention.

Figure 2 is a side elevational view of the system taken along line 2-2 of Figure 1.

Figure 3 is a plan view similar to Figure 1 but with the needle assembly in the retracted orientation.

Figure 4 is a perspective illustration of the system shown in the prior Figures.

Figure 5 is a cross sectional view taken along line 5-5 of Figure 2.

Figure 6 is a front elevation view taken along line 6-6 of Figure 2.
Figure 7 is an exploded perspective illustration of the system shown in the prior Figures.

Figure 8 is a six-sided illustration of the housing assembly comprising the anti-needlestick system in a closed orientation. Wherein (a) is a plan view, (b) is a side elevation view, (c) is a bottom end view, (d) is a left side view, (e) is a right side view.

Figure 9 (a) is a side elevation view of the housing assembly comprising the anti-needlestick system in a closed orientation. Figure (b)-(d) are cross-sectional views taken along line A-A, B-B, and C-C of the Figure 9 (a) respectively.

Figure 10 is a perspective illustration of the way the anti-needlestick system is constructed, wherein (a) is a up-sided view and (b) is a bottom end view of the housing assembly in a coplanar or full open orientation.

Figure 11 is a perspective illustration of the way the anti-needlestick system is constructed, wherein (a) is perspective view of the housing assembling in an half open orientation, (b) is the perspective up-side view of the housing assembly in closed orientation and (c) is a perspective bottom end view of the housing assembly in closed orientation.

Figure 12 is a perspective illustration of the way the anti-needlestick system is constructed, wherein (a) is a side elevation view of the housing assembly wherein upper section I and lower section II are in an open and in a coplanar position corresponding to that of Figure 7, (b) is the side elevation view of the housing assembly wherein upper section I and lower section II are in a half open orientation approaching with each other and
(c) in the side elevation view wherein upper section I and lower section II are engaged with each other and form a entirely closed orientation.

Figure 13 is a perspective illustration of the way the anti-needlestick system is constructed, wherein (a) is a side view of the anti-needlestick system wherein needle is in an extended orientation, (b) is the perspective view of the system wherein cover 62 is being removed from the needle 58 and (c) is the perspective view wherein needle is in a retreated orientation and the system is in a closed orientation.

Figure 14 is a perspective illustration of the extended and retreated orientation, wherein (a) is a perspective bottom side view of the system in an extended orientation and (b) is a perspective bottom side view of the system in an retreated orientation.

Figure 15 is a planar illustration of the extended and retreated orientation, wherein (a) is a plan view of the system in an extended orientation and (b) is a plan view in an retreated orientation.

Figure 16 is a perspective illustration of the upwardly extending flange projection wherein (a) is a perspective view of the system, (b) is a side elevation view of the system and (c) is an partly enlarged side-elevation view corresponding to the part E shown in Figure 16 (b), showing angles $\theta_1$ and $\theta_2$.

Figure 17 is a perspective illustration of the laterally existing non-slip recess 40, wherein (a) is a perspective view of the system and (b) is a partly enlarged perspective view corresponding to the part E shown in Figure 17 (a).
Figure 18 is a planar illustration of the bottom floor configuration of the system having an angle $\theta$ with respect to line L parallel to needle 58, wherein (a) is a side elevation view of the system having an angle $\theta$, (b) is a side elevation view of the system when placed on a planar surface L' such as a patient skin and (c) is a partly enlarged side elevation view of the figure 18 (b).

Figure 19 is a perspective illustration of the hinge portion wherein (a) is a perspective bottom end view of the system and (b) is a partly enlarged perspective view of the portion E in figure 19 (b).

Figure 20 is a perspective illustration of the system showing that the system has a "chamfered constitution" wherein most edges and corners are chamfered constitution and have round chamfered finishing r1, r2, r3, r4, r5, r6, r7, ....

**Explanation of Reference Numerals**

10 anti-needlestick system
14 housing assembly
48 needle assembly
16 main body portion
18 distal end
20 first aperture
22' second aperture
22 proximal end
24 generally cylindrical extent
26 semi-cylindrical upper section
28 lower edge
30 semi-cylindrical lower section
32 upper edge
34 hinge portions
38 upwardly extending flange projection
40 laterally extending non-slip recesses
42 outwardly extending female projections
44 male projections
48 needle assembly
50 cylindrical hollow hub
52 distal end
54 proximal end
56 wings
58 needle
60 flexible tube
62 cover
66 primary recess
68 forward recess
70 abutment surface

Best Mode for Carrying Out the Invention

The invention will be better understood and objects other than those set forth above will become apparent when consideration is given to the following detailed description thereof. Such description makes reference to the annexed drawings. With reference now to the drawings, and in particular to Figure 1 thereof, the preferred embodiment of the new and improved anti-needlestick system embodying the principles and concepts of the present invention and generally designated by the reference numeral 10 will be described.
The present invention, the anti-needlestick system 10 is comprised of a plurality of components. Such components in their broadest context include a housing assembly 14 and a needle assembly 48. Such components are individually configured and correlated with respect to each other so as to attain the desired objective.

First provided is a housing assembly 14 (or also called a needle cover). The housing assembly 14 has a main body portion 16. The main body portion 16 has a distal end 18. The distal end 18 has a first aperture 20. The main body portion 16 has a proximal end 22. The proximal end 22 has a second aperture 20'. The main body portion 16 has a generally cylindrical extent 24. The generally cylindrical extent 24 is in a generally rectangular exterior cross sectional configuration over the majority of its length between the distal and proximal ends. The main body portion 16 has a semi-cylindrical upper section 26 or I. The upper section 26 has a lower edge 28. The upper section 26 is coupled to a semi-cylindrical lower section 30 or II. The lower section 30 has an upper edge 32.

(hinge portions, closed and open orientations)

The main body section 16 has a pair of flexible hinge portions 34. The upper ends of the hinge portions 34 are coupled to the upper section at the distal end 18. The lower ends of the hinge portions 34 are coupled to the lower section at the distal end 18. The hinge portions are adapted to allow movement of the halves between a closed operative orientation (COO) and an open inoperative orientation (O10).

In this closed operative orientation (COO) the upper and lower edges 32, 28 are provided in contact in a horizontal plane. In this manner
the main body portion 16 is formed into a cylinder with a generally circular cross section. In the open inoperative orientation (010) the upper and lower edges 32, 28 are provided out of contact and spaced from each other. The hinge portions 34 are located on opposite sides of the first aperture 20 and form a living hinge, (handling elements)

Handling elements H are provided. The handling elements are formed with the main body portion 16. The handling elements H include an upwardly extending flange projection 38. The upwardly extending flange projection 38 is provided on the upper section coplanar with the distal end 18. The handling elements H include a plurality of laterally extending non-slip recesses 40. The laterally extending non-slip recesses 40 are provided on the upper section proximally of the upwardly extending flange projection 38. The detailed configuration of the laterally extending non-slip recesses 40 is illustrated in figure 17(b). The non-slip recesses 40 prevent accidental slipping of fingers when handling the assembly and impart increased handleability or operability to the medical practitioners in a similar fashion as with the flange projection 38, which is detailed as follows.

The handling elements H also include outwardly extending female projections 42. The outwardly extending female projects 42 are provided on the upper section adjacent to the proximal end. The handling elements H include male projections 44. The male projections 44 extend upwardly from the lower section. The male projections 44 are provided in a co-operable relationship with the
female projection 42. In this manner the sections are releasably secured together in the closed orientation.

Referring to Figure 16, more detailed explanation about the function of upwardly extending flange projection 38 is given. The primary object of providing the flange projection 38 is to impart increased handleability or operability to a medical practitioner, who presses or hooks his or her thumb or index finger against the flange projection 38 and with this hold some operation such as withdrawal of needle or tube into the housing assembly is carried out without involving accidental needle sticking. In the invention, flange projection 38 is preferably constituted to rise at an angle greater than right angle (90°) thereby giving far improved feeling of fitness of the fingers and securing increased manipulability. The angle θ1 made between the face of flange projection 38 and floor line L is preferably given by 90° < θ1 < 120° as shown in Figure 16(c) (line L is a line parallel to the needle).

Additionally thus making up-rising flange projection angel θ1 greater than right angel contributes to greater mold releasability of this housing assembly when it is manufactured by injection molding procedure, wherein the angled-flange (or tapered-flange) projection functions as a "draft". The housing assembly is ordinarily made of hard or semi hard plastic materials such as hard polyvinyl chloride or polypropylene resin or the like using injection molding technology.

It is also preferable that the end portion (or end wall) 39 of the housing assembly is so constituted as to have an angle θ2 with respect to the floor line L greater than right angle, more preferably the angle is given by 90° < θ2 < 120°, as shown in Figure
to secure effective needle length, which is the maximum length extendable from the housing assembly to be exposed. When molding an article such as housing assembly which has an end portion, with hinge portion 18 at the center of it, having an end-portion angel $\theta_2$ greater than right angel leads to greater mold releasability of the assembly when it is manufactured by injection molding procedure for the similar reason described above. In the polymer injection processing the angled-end (or tapered end) portion also facilitates good flow of resin in the mold and prevents the short shot of resin.

Provided next is a needle assembly 48. The needle assembly 48 has a cylindrical hollow hub 50. The hub 50 has a distal end 52. The hub 50 has a proximal end 54. The hub 50 is slidably positioned within the housing assembly 14. The hub 50 has a flat laterally extending a pair of wings 56. The needle assembly 14 includes a needle 58. The needle 58 is coupled to the distal end 52 of the hub 50. The needle 58 is slidably received in the first aperture 20. The needle assembly 48 includes a flexible tube 60. The flexible tube 60 is coupled to the proximal end 54 of the hub 50. The flexible tube 60 is slidably received in the second aperture 20'. The needle assembly 48 includes a cover 62. The cover 62 is removably positioned over the needle 58 when in the extended orientation (EO).

Provided last are guides G. The guides G are formed in the edges of the sections. The guides G include a primary recess 66. The primary recess 66 is formed in the upper edge 32 of the lower section 30 or (II) between a forward end proximal of the upwardly extending
flange projection 38 and a rearward end distal of the male and female
44,42 projections. The guides G include a forward recess 68. The
forward recess 68 is formed in the lower edge of the upper section
26 or (I) proximally of the forward end of the primary recess 66.

The guides G also include an abutment surface 70. The abutment surface
70 is formed in the lower edge of the upper section distal of the
rearward end of the primary recess 66. The wings 56 are adapted to
extend laterally from the hub 50 through the primary recess 66 at
an extended orientation (EO). The majority of the needle 58 extends
distal of the main body portion 16. The forward recess 68 assists
in retaining the needle in the extended orientation (EO). The wings
56 are adapted to extend laterally from the hub 50 through the primary
recess 66 at a retracted orientation (RO). In the retracted
orientation the entirety of the needle 58 is provided totally within
the main body portion 16. The abutment surface 70 assists in retaining
the needle in the retracted orientation (RO). The needle assembly
48 includes the needle 58. The needle 58 is adapted to be moved from
the extended orientation (EO) to the retracted orientation (RO) by
a user sliding the wings within the primary recess.

(characteristics of bottom floor)

In the present invention as shown in figure 18, it is preferable
that the bottom floor or bottom surface 75 of the housing assembly
is so configured as to have an angle $\theta$ more than zero ($0^\circ$) with
respect to line $L$, which is parallel to the needle 58 (or the patient's
skin $L'$), the angle being preferably given by $0^\circ < \theta < 10^\circ$ as shown
in Figure 18(a).
Thus having a configuration of the angled bottom floor line (ABFL) contributes to achieve mainly two objectives: The first is to keep or turn the needle-tip downwards, thereby securing a stable positioning of the anti-needlestick system while the needle is being punctured to the patient skin for medical treatment. The second is to effectively reduce the height or profile of the housing assembly thereby making this configuration of the assembly as compact as possible for helping the patient feel comfortable and easy while the assembly is fixed or attached onto his or her skin for treatment.

As shown in Figure 20, the anti-sticking system of the present invention has a chamfered constitution wherein most edges and corners are chamfered and have round chamfered finishing r1, r2, r3, r4, r5, r6, r7,... Usually a medical practitioner or a nurse handles the anti-sticking device with gloved hands for prevention of contagious infection. And the thus full chamfered constitution greatly contributes to reduce the chance of hang-up of gloved fingers with the devise. The full chamfering design also makes great contribution to improve the feelings of the patient and thereby eliminating his or her discomfort while the anti-sticking device is in use and its bottom side surface is put into direct contact with the patient's skin.

(manner of usage of the system)

The components of the system of the present invention, particularly the upwardly extending flange projection 38, act to facilitate one-handed utilization of the system. Since the upwardly extending flange projection 38 is essentially coplanar with the distal end 18 of the housing 14, a user of the system may place an index
finger against the projection while using a thumb and middle finger of the same hand to withdraw the needle from the patient. The other hand of the user is thus free to apply pressure to the patient at the injection site with gauze or cotton. Additionally, the rectangular cross section of the main body portion 16, with a planar section in contact with the patient's skin, acts to abate rocking of the system as during withdrawal of the needle.

As to the manner of usage and operation of the present invention, the same should be apparent from the above description. Accordingly, no further discussion relating to the manner of usage and operation will be provided.

With respect to the above description then, it is to be realized that the optimum dimensional relationships for the parts of the invention, to include variations in size, materials, shape, form, function and manner of operation, assembly and use, are deemed readily apparent and obvious to one skilled in the art, and all equivalent relationships to those illustrated in the drawings and described in the specification are intended to be encompassed by the present invention.

Therefore, the foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly, all suitable modifications and equivalents may be resorted to, falling within the scope of the invention.
Industrial Applicability

The present invention directed to a new and improved anti-needlestick system which is easily and efficiently manufactured and marketed, can be preferably applied to the medical and healthcare field.

The present invention directed to a new and improved anti-needlestick system which is of durable and reliable constructions, can be preferably applied to the medical and healthcare field.

The present invention directed to a new and improved anti-needlestick system which is susceptible of a low cost of manufacture with regard to both materials and labor, thereby making such anti-needlestick system economically available to the buying public, can be preferably applied to the medical and healthcare field.

The present invention directed to an anti-needlestick system for shielding a needle immediately as it is withdrawn from a patient, the shielding being in a safe, convenient and economical manner, can be preferably applied to the medical and healthcare field.
CLAIMS

1. An anti-needlestick system (10) comprising:
   a housing assembly (14) having a main body portion (16) with a distal end (18) formed with a first aperture (20) and a proximal end (22) formed with a second aperture (20') and with a cylindrical extent over the majority of its length, the main body portion (16) having an upper section (I) with a lower edge (28) and a lower section (II) with an upper edge (32), a pair of flexible hinge portions (34) with upper ends coupled to the upper section at the distal end (18) and with lower ends coupled to the lower section at the distal end (18), the hinge portions (34) adapted to allow movement of the halves between a closed and an open orientation; and
   handling elements (H) formed with the main body portion, the handling elements including an upwardly extending flange projection (38) located on the upper section essentially coplanar with the distal end to facilitate one handed utilization of the system.

2. The system as set forth in claim 1 and further including:
   a needle assembly (48) including a hollow hub (50) with a distal and a proximal end (52,54), the hollow hub slidably positioned within the housing assembly (14), the hub (50) having flat laterally extending wings (56) extending between the edges of the main body portion (16), a needle (58) coupled to the distal end (54) of the hub slidably received in the first aperture (22), and a flexible tube (60) coupled to the proximal end of the hub (50) slidably received in the second aperture (22').
3. The system as set forth in claim 2 and further including:
guides (G) formed in the edges of the sections including a primary recess (66) formed in the upper edge (32) of the lower section (II) between a forward end and a rearward end, a forward recess (68) in the lower edge of the upper section (I) proximally of the forward end of the primary recess (66), and an abutment surface (70) formed in the lower edge of the upper section (I) distally of the rearward end of the primary recess (66), the wings (56) adapted to extend laterally from the hub (50) through the primary recess (66) at an extended orientation (EO) with the majority of the needle extending distally of the main body portion (16) and with the forward recess (68) assisting in retaining the needle in the extended orientation (0), the wings (56) adapted to extend laterally from the hub (50) through the primary recess (66) at a retracted orientation (RO) with the entirety of the needle totally within the main body portion (16) and with the abutment surface (70) assisting in retaining the needle in the retracted orientation (0'), the needle assembly (48) including the needle adapted to be moved from the extended orientation (0) to the retracted orientation (0') by a user sliding the wings within the primary recess.

4. The system as set forth in claim 2 and further including:
additional handling elements (H') formed with the main body portion (16), the additional handling elements (H') including a plurality of laterally extending recesses (40) located on the upper section proximal of the upwardly extending flange projection (38), the additional handling elements also including outwardly extending
female projections (42) located on the upper section adjacent to the
proximal end with male projections (44) extending upwardly from the
lower section in co-operable relationship with the female projection
(42) for releasably securing the sections together in the closed
orientation (CO).

5. The system as set forth in claim 2 and further including a
cover (62) removably received over the needle (58) when in the extended
orientation (EO).

6. The system as set forth in claim 2 wherein the majority of
the exterior extent of the housing assembly (14) is in a generally
rectangular cross sectional configuration.

7. An anti-needlestick system (10) for shielding a needle
immediately as it is withdrawn from a patient, the shielding being
in a safe, convenient and economical manner, the system comprising,
in combination:

a housing assembly (14) having a main body portion (15) with
a distal end (18) formed with a first aperture (20) and a proximal
end (22) formed with a second aperture (20′) and with a cylindrical
extent in a generally rectangular exterior cross sectional
configuration over the majority of its length between the distal and
proximal ends (18,22), the main body portion (16) having a
semi-cylindrical upper section (I) with a lower edge (28) and a
semi-cylindrical lower section (II) with an upper edge (32), a pair
of flexible hinge portions (34) with upper ends coupled to the upper
section (I) at the distal end (18) and lower ends coupled to the lower section (II) at the distal end (18), the hinge portions (34) adapted to allow movement of the halves between a closed operative orientation and an open inoperative orientation, the closed operative orientation being with the upper and lower edges in contact in a horizontal plane to form the main body portion into a cylinder with a circular cross section, the open inoperative orientation being with the upper and lower edges out of contact and spaced from each other, the hinge portions (34) being located on opposite sides of the first aperture;

handling elements (H) formed with the main body portion (16), the handling elements including an upwardly extending flange projection (38) located on the upper section coplanar with the distal end (18), the handling elements (H) including a plurality of laterally extending non-slip recesses (40) located on the upper section proximal of the upwardly extending flange projection (34), the handling elements (H) also including outwardly extending female projections (42) located on the upper section adjacent to the proximal end with male projections (44) extending upwardly from the lower section in co-operable relationship with the female projection (42) for releasably securing the sections together in the closed orientation (CO);

a needle assembly (48) including a cylindrical hollow hub (50) with a distal end (52) and a proximal end (54) slidably positioned within the housing assembly (14), the hub (50) having flat laterally extending wings (56), a needle (58) coupled to the distal end (54) of the hub slidably received in the first aperture (20), a flexible tube (60) coupled to the proximal end of the hub slidably received
in the second aperture (20'), a cover (62) removably positioned over
the needle when in the extended orientation; and

guides (G) formed in the edges of the sections including a
primary recess (66) formed in the upper edge (32) of the lower section
between a forward end proximal of the upwardly extending flange
projection (38) and a rearward end distal of the male and female
projections (42,44), a forward recess in the lower edge of the upper
section proximal of the forward end of the primary recess, and an
abutment surface formed in the lower edge of the upper section distal
of the rearward end of the primary recess, the wings (56) adapted
to extend laterally from the hub (50) through the primary recess (66)
at an extended orientation with the majority of the needle extending
distal of the main body portion (16) and with the forward recess (68)
assisting in retaining the needle in the extended orientation (EO),
the wings adapted to extend laterally from the hub through the primary
recess (66) at a retracted orientation (RO) with the entirety of the
needle totally within the main body portion (16) and with the abutment
surface (70) assisting in retaining the needle in the retracted
orientation (RO), the needle assembly including the needle adapted
to be moved from the extended orientation (EO) to the retracted
orientation (RO) by a user sliding the wings within the primary recess.

8. The system as set forth in any of claims 1-7 wherein the
system has a chamfered constitution in that most edges and corners
are chamfered and have round chamfered finishing (r1 r2, r3, r4, r5,
r6, r7, ...).
**INTERNATIONAL SEARCH REPORT**

**A. CLASSIFICATION OF SUBJECT MATTER**

Int.Cl. A61M5/14 (2006.01) 

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

Int.Cl. A61M5/14

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Published examined utility model applications of Japan 1922 1996
Published unexamined utility model applications of Japan 1971 2009
Registered utility model specifications of Japan 1996 2009
Published registered utility model applications of Japan 1994 2009

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

<table>
<thead>
<tr>
<th>Category</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y</td>
<td>US 5120320 A (BECTON, DICKINSON AND COMPANY) 1992.06.09, line 15, column 3 to line 8, column 5, Fig. 1-8 &amp; JP 4-319362 A &amp; EP 499077 A1</td>
<td>1-13</td>
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<tr>
<td>Y</td>
<td>US 6595965 B1 (DSU MEDICAL CORPORATION) 2003.07.22, line 17, column 4 to line 29, column 7, Fig. 1-17 &amp; JP 8-38601 A &amp; EP 872256 A3</td>
<td>1-13</td>
</tr>
<tr>
<td>Y</td>
<td>JP 7-184997 A (PIO NICOLETTI) 1995.07.25, [0005] - [0021], Fig. 1-9 (No Family)</td>
<td>1-13</td>
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“&” document member of the same patent family

Date of the actual completion of the international search

27.11.2009

Date of mailing of the international search report

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<tbody>
<tr>
<td>Y</td>
<td>US 5266072 A (David S. UTTERBERG) 1993.11.30, lines 43-44, column 4, Fig. 2 &amp; JP 3-505293 A &amp; WO 1990/003196 A1</td>
<td>5, 7, 8</td>
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