

CARRTECH LLC; Patent Issued for Filtering Needle Cap Having a Sleeve Sealing around a Needle (USPTO 9669164)

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2017 JUN 19 (VerticalNews) -- By a News Reporter-Staff News Editor at Journal of Engineering -- A patent by the inventors Carr, Sue E. (Dickerson, MD); Delgado, Jessie (Durham, NC); Browka, Edward (Oneida, NY); McCall, Jr., Charles E. (Fuquay-Varina, NC); Foshee, David L. (Apex, NC), filed on November 16, 2015, was published online on June 6, 2017, according to news reporting originating from Alexandria, Virginia, by VerticalNews correspondents.

Patent number 9669164 is assigned to CARRTECH LLC (Dickerson, MD).

The following quote was obtained by the news editors from the background information supplied by the inventors:
"Field of the Disclosure

"This disclosure relates generally to a filtered needle for safely administering pharmaceuticals or other liquid payloads needing filtration before administration to a patient. The filtered needle may be used with human patients, veterinary uses for animals, and other uses that benefit from the filtering of a liquid payload before delivery. In this disclosure and the claims that follow, the term needle should be understood as a hypodermic needle or analogous needle with an open distal end and an interior lumen to allow for movement of a liquid.

"Liquid pharmaceuticals are typically stored in sealed glass ampoules (often spelled ampule) or other known storage devices. In the case of glass ampoules, order to gain access to the pharmaceuticals, the ampoule is opened by snapping the glass neck. In so doing, debris in the form of glass shards may be produced. The shards must be removed from the pharmaceuticals prior to administration. The debris is typically removed by drawing up the pharmaceutical through a filtered cannula or straw secured to the end of the syringe.

"While the most common use of a syringe to deliver liquids is to deliver a liquid pharmaceutical, other liquid payloads can be drawn in from a reservoir through a filter to remove debris before delivering the filtered liquid payload through a needle connected to the syringe.

"Examples of uses beyond pharmaceuticals include the injection of some nutraceuticals into a patient. Some public health organizations provide needle exchanges to people addicted to illegal drugs as a way to limit spread of disease and a filtered needle may be of benefit in this application. Some blood products such as PCC (Prothrombin Complex C) use a filtered needle. The list of uses should not be deemed a limitation to the scope of the claims as those of skill in the art will be able to adapt the teachings of the present disclosure for use with a particular liquid payload and need for filtration.

"Methods for removing debris include a two stage process and a one stage process. In the two stage process, a needle or straw has a filter element secured in the needle and connector portion. As the liquid payload is drawn up into the syringe, the filter traps the debris removing it from the liquid payload to be administered. The filtered straw or needle is then removed from the syringe and discarded. In order to avoid inadvertent administration of contaminated liquid payload to the patient care must be taken to remove and discard the filtered needle. In addition to the danger of mistakenly administering a contaminated liquid payload to a patient, the two stage process may involve the use of specially adapted and costly disposable devices.

"U.S. Pat. No. 8,002,751 for **Filter Needle** discloses a one-step process. This one step process employs a specially fabricated frangible needle or straw which has a filter secured near the inlet. The needle or straw has a score line between the filter and the syringe connection. The pharmaceutical is first drawn up from the ampoule through the filter trapping the debris. The tip of the needle or straw is then snapped off along the score line and discarded, taking with it the filter and trapped debris. The one stage process requires a specially fabricated

needle or straw which may be snapped off leaving a sharp end for administering the pharmaceuticals. It is difficult to manufacture a needle having the required properties. In addition, questions have been raised as to whether a frangible needle or straw may be produced which does not itself produce debris, such as metal or plastic shards.

"Accordingly, an inexpensive and reliable system for filtering liquid payloads before delivery is desired."

In addition to the background information obtained for this patent, VerticalNews journalists also obtained the inventors' summary information for this patent: "Aspects of the teachings contained within this disclosure are addressed in the claims submitted with this application upon filing. Rather than adding redundant restatements of the contents of the claims, these claims should be considered incorporated by reference into this summary.

"Some aspects of the present disclosure may be expressed as a filtered needle for use in administering a liquid payload, the filtered needle including a needle and connector portion and a filtering needle cap. The needle and connector portion including: a hollow needle with a needle distal end having an opening to a lumen running through the hollow needle; and a hub. The hub including an open proximal end adapted to reversibly engage a fluid fitting and; a distal end of the hub engaged with a proximal end of the hollow needle. The filtering needle cap including a distal open end in fluid communication via an internal channel with a proximal open end of the filtering needle cap. The filtering needle cap proximal end sized to receive the distal end of the hub within the proximal end of the filtering needle cap to reversibly engage the hub when needle distal end is inserted into the internal channel. The filtering needle cap including a filter element adapted for removing debris from the liquid payload as the liquid payload is drawn through the filtering needle cap into the lumen within the hollow needle as liquid payload is drawn into the fluid fitting. The filtering needle cap including a seal to seal around an outside diameter of the hollow needle so that liquid payload is drawn into the lumen in the hollow needle as liquid payload is drawn into the fluid fitting.

"The seal may be placed towards the distal end of the hollow needle so that the distal end of the seal is closer to the distal end of the hollow needle than to the proximal end of the hollow needle. The distal end of the seal may be distal to a proximal end of the opening to the lumen running through the hollow needle.

"Other aspects of the present disclosure may be expressed as a method for loading a quantity of filtered liquid payload into a syringe and connected hollow needle. The method including the steps of using a syringe to draw in liquid payload from a reservoir of liquid payload, the liquid payload passing through a filter element in a filtering needle cap before entering an opening in a needle distal end before removing the filtering needle cap from the filtered needle to expose the needle distal end.

"The filtered needle may have a seal. The seal may be placed towards the distal end of the hollow needle so that the distal end of the seal is closer to the distal end of the hollow needle than to the proximal end of the hollow needle. The distal end of the seal may be distal to a proximal end of the opening to the lumen running through the hollow needle.

"This summary is meant to provide an introduction to the concepts that are disclosed within the specification without being an exhaustive list of the many teachings and variations upon those teachings that are provided in the extended discussion within this disclosure. Thus, the contents of this summary should not be used to limit the scope of the claims that follow.

"Inventive concepts are illustrated in a series of examples, some examples showing more than one inventive concept. Individual inventive concepts can be implemented without implementing all details provided in a particular example. It is not necessary to provide examples of every possible combination of the inventive concepts provide below as one of skill in the art will recognize that inventive concepts illustrated in various examples can be combined together in order to address a specific application.

"Other systems, methods, features and advantages of the disclosed teachings will be or will become apparent to one with skill in the art upon examination of the following figures and detailed description. It is intended that all such additional systems, methods, features and advantages be included within the scope of and be protected by the accompanying claims."

URL and more information on this patent, see: Carr, Sue E.; Delgado, Jessie; Browka, Edward; McCall, Jr., Charles E.; Foshee, David L.. Filtering Needle Cap Having a Sleeve Sealing around a Needle. U.S. Patent Number 9669164, filed November 16, 2015, and published online on June 6, 2017. Patent URL: <http://patft.uspto.gov/netacgi/nph-Parser?Sect1=PTO1&Sect2=HITOFF&d=PALL&p=1&u=%2Fnethtml%2FPTO%2Fsrchnum.htm&r=1&f=G&l=50&s1=9669164.PN.&OS=PN/9669164RS=PN/9669164>

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