Abstract:

A disposable Cast and Intravenous (IV) or rV-PEC Medical Shower System for protecting casted and/or IV therapy injected appendages from moisture while a patient is showering. Plurality of embodiments 110, 210, 310, 410, 510, 610, 710 and 810 are disclosed including a variety of sizes and colors for a variety of users for a variety of applications to accommodate a variety of limbs 211, 299, 411, 511, 625, 731 and afflictions such as wound with or without a bandage, IV or drain line and fixed casts. One embodiment of the system is characterized by flexible plastic in a tubular shape 731, 811 with only one opening 115, which creates a water tight seal between the appendage and the system. The mid-section torso embodiment 800 also has an optional pocket 850 on the surface (facing the skin) a pocket 855 for housing a medical device such as an insulin pump or pocket health monitor. Also described is process for making and using the system.
BACKGROUND
This disposable cast and IV medical shower system of this invention relates to methods, devices, and system for protecting a patient with a cast or wound with or without a bandage, or an Intravenous (IV) therapy line or drain line attached to an appendage from getting the cast, bandage, wound, drain line or IV site wet during a shower or bath. More specifically this device allows the patient to independently maintain personal hygiene without the need of a nurse or assistant, and without the worry of damaging the medical implements or creating infection due to the water from the shower.

THE PROBLEM
The problem with prior art cast covers designed for bathing and showering is that they tend to be expensive to manufacture and package, and include a hard bulky circular mechanism for securing the device onto the protected appendage.
While this hard circular mechanism is necessary to secure the device it reduces patient flexibility as well as increases production and shipping costs. Prior art devices are also not disposable. This invention eliminates the need for this securing mechanism thereby reducing production cost, shipping cost, and cost to the customer.

SUMMARY

The cast and IV medical shower system is a watertight system designed to protect patients with casts, wounds with or without bandages, and/or intravenous (IV) therapy sites or drain lines on their hands, arms, feet, legs, or other limb, body part or appendage from getting the limb or body part wet during a shower or bath. A Cast and Intravenous (IV) Medical Shower System for protecting casted and/or IV therapy injected appendages from moisture while a patient is showering. Pluralities of embodiments are disclosed. One embodiment of the system is characterized by flexible plastic in a tubal shape with only one opening, which creates a water tight seal between the appendage and the system. The mid-section torso embodiment also has an optional pocket on the inside surface facing the skin for housing a medical device such as an insulin pump or pocket health monitor. The invention reduces the risk of infection to the appendage or damage to a protected cast or bandage by eliminating the chance of water infiltration.

PRIOR ART

A prior art search was not commissioned because the inventor is intimately familiar with the prior art. A prior art patentability search was neither commissioned nor conducted by the inventor, but the inventor is intimately familiar with the prior art. Many inventors have designed protection devices to keep cast, bandages, and IV connections dry and hygienic during patient showers, however none of the prior devices include the flexibility, simple ease of use, reliable water seal, durability, affordability, and disposability of the current invention.

The solution provided by the present inventor is elegantly simple, cost effective, and intuitive. Prior art devices include ordinary plastic bags secured to the appendage in various ways, inflatable cast covers made of latex or similar
material, and waterproof cast covers with hard bulky securing mechanisms. Following are typical examples of the prior art known to the applicant and/or his attorney arranged in reverse chronological order, with most recent first for ready reference of the reader.

a) United States Non-Provisional Utility Patent US 6,267,115 B1 bestowed upon Florine Marshel of Foxridge, MD on July 31, 2002 for, "Intravenous Protecting Device"

b) United States Non-Provisional Utility Patent 4,986,265 awarded to Ronald E. Caponi of Orlando Florida on Jan 22, 1991 for, "Protective Cover for Cast"

c) United States Non-Provisional Utility Patent 4,966,135 bestowed upon Bruce Renfrew of San Mateo, CA on Oct. 30, 1990 for, "Orthopedic Cast Cover and Method of Manufacture"

d) United States Non-Provisional Utility Patent 4,363,317 earned by Daniel Broucek of Grand Rapids MI on December 14, 1982 for, "Watertight Cast Cover"

e) United States non-Provisional Utility Patent 4,043,326 honorably granted to Little et al on Aug. 23, 1977 for "Waterproof Cast Protector"

DISCUSSION OF THE PRIOR ART

Prior art cast covers also include air-casts that must be stretched over the existing casts and inflated to prevent water from entering. One problem with these inflatable devices is that while they may be suitable for patients with bandages and casts they are not suitable for patients undergoing IV therapy.

Other problems with the inflatable covers is that due to their inflatable nature they are subject to puncture from sharp fiberglass cast threads or even fingernails, they are hard to clean for a patient with a casted arm, and they are often made of latex which may cause an allergic reaction to some users.

The present invention overcomes the limitations of the prior art because it is not puncture-able when used correctly, and is made of hypo-allergenic material so is less likely to cause an allergic reaction to the user. This invention is also less expensive to manufacture than the prior art, and is a lower priced disposable alternative that does not require cleaning.
Prior art cast covers also include the use of ordinary plastic bags secured over the appendage. This method of cast covering often does not create the waterproof seal required by the user, does not fit the protected appendage well, and is not durable enough to be used more than once.

Additionally, prior art IV therapy site covers do not accommodate patients that also have casts or bandages on the same appendage, and prior art cast covers do not allow for the protection of IV therapy sites. This invention creates a waterproof seal around a patient’s IV therapy site and any cast or bandage on the same appendage. Prior art devices are also typically not disposable.

None of the prior art devices singly, or in combination, provides most of the features and objectives established by the inventor for this system as enumerated below. At least one of the objects is met in whole or in part by this invention.

OBJECTIVES

1. It is an objective of this invention to provide methods, devices, and a system, for protecting an appendage from getting wet during a shower.

2. It is an objective of this invention to provide methods, devices and system for accurate trackball with light compensated optical encoders.

3. It is therefore an object of the present invention to provide a new and improved system which has all the advantages of the prior art but none of the disadvantages of the prior art.

4. An even further object of the present invention is to provide a new and improved system which is susceptible to low cost of manufacturing with regards to materials, labor and burden. The savings thus resulting from it can be passed on to which in turn to the consuming public.

5. It is another object of the present invention to provide new and improved system which may be easily and efficiently manufactured and marketed.
6. It is further object of the present invention to provide a new and improved system which is safe and long lasting.

7. Another objective of this invention is to provide protection of an appendage encased in a cast during a shower or bath.

8. Another objective of this invention is to provide waterproof protection of a bandaged appendage during a shower or bath.

9. Another objective of this invention is to hygienically protect an intravenous (IV) therapy site on an appendage by shielding said site from water during a shower or bath.

10. Another objective of this invention is that it can be used to protect an appendage from the elements during inclement weather conditions.

11. Another objective of this invention is that it be easy to apply, secure, and remove by a user that has functional use of only one hand or arm.

12. Another objective of this invention is to be economical alternative to prior art solutions.

13. Another objective of this invention is that it be easy to use, even intuitive, and require little additional training for patient or hospital staff.

14. Another objective of this invention is to allow a casted, bandaged, and/or IV receiving patient to independently maintain personal hygiene without the additional expense of a nurse or medical assistant.

15. Another objective of this invention is to allow a casted, bandaged, or IV receiving patient to take a shower without the fear of risking infection or damaging medical equipment.

16. Another objective of this invention is that it be physically safe in a household or medical environment.

17. Another objective of this invention is to be easy to transport and store.

18. Another objective of this invention is that it meets all federal, state, and local standards and guidelines with respect to safety, environment, and quality.
Another objective of this invention is that its design is easy, simple and elegant.

Another objective of this invention is to provide plurality of flexible modes of operation.

Another objective of this invention is that it be capable of multiple uses.

Another objective of this invention is that its use is such that it does not require any additional training.

Another objective of this invention is to provide an integrated solution.

Another objective of this invention is to meet or exceed most of the applicable federal, state, local and other private standards guidelines, regulations and recommendations with respect to safety, environment, energy consumption.

Another objective of this invention is to permit disposal after single use.

Another objective of this invention is to provide a variety of sizes to fit children as well as adults and to provide colorful aesthetics design to please, appease and even entice children to take bath under trying circumstances.

Another objective of this invention is that it can be made from modular standard materials, and components that are also easily maintainable.

Another objective of the Cast and IV Medical Shower System of this invention is to be highly reliable including high MTBF (High Mean Time Between Failures).

Another objective of this invention is to reduce the insurance premiums for liability insurance of the medical service or healthcare provider.
30. Another objective of this invention is to prevent any harm to patients their visitors and staff attending the patients.

Other objectives of this invention reside in its simplicity, elegance of design, ease of manufacture, service and use and even aesthetics as will become apparent from the following brief description of the drawings and the detailed description of the concept embodiment.

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 being made to the accompanying drawings and descriptive matter in which there is illustrated preferred embodiment and alternate embodiment(s) of the invention.

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 are described hereafter and which form the subject matter of the claims appended at the end of the specification.
BRIEF DESCRIPTION OF THE DRAWINGS

a) Figure 1 is an isometric view of the wrist & hand full cover embodiment of the subject invention shown with the optional IV window.

b) FIG. 1B is a perspective view of the wrist & hand full cover embodiment of the subject invention with the optional IV or IV Pec window.

c) FIG. 2A is an isometric view of the arm to elbow partial cover embodiment of the subject invention with the user's hand shown extending through the opening. The optional IV or IV Pec window is shown in this embodiment.

d) FIG. 2B is an isometric view of the arm to elbow partial cover embodiment of the subject invention not in use. The optional IV or IV PEC window is shown in this embodiment.

e) FIG. 3 is an isometric view of the neck protecting embodiment of the subject invention.

f) FIG. 4 is an isometric view of the midsection protection embodiment of the subject invention also showing a window or patch for the IV (IntraVenus) or IV PEC line or chord.

g) FIG. 5A is an isometric view of the foot & leg full cover embodiment of the subject invention.

h) FIG. 5B is an isometric view of the upper thigh to ankle partial embodiment.

i) FIG. 6 is an isometric view of the head cap embodiment of this invention.

j) FIG. 7A is an isometric view of the forearm, elbow and aft arm cover embodiment of the subject invention analogous to ankle and leg embodiment of 5A.

k) FIG. 7B is an isometric view of the arm and elbow embodiment of FIG. 7A in straight position of arm.

l) FIG. 8 is an isometric view of the midsection embodiment of the subject invention, also showing a pocket for housing a monitor and a window or patch for the IV (IntraVenus) or IV Pec line or chord for the monitor or the like device.
DETAILED DESCRIPTION OF THE BEST MODE PREFERRED EMBODIMENT

In this detailed description of the preferred and alternate embodiments, a plurality of embodiments are disclosed. As shown in the drawings wherein like numerals represent like parts of various figures wherein Figure 1 is an isometric view of the wrist & hand full cover embodiment of the subject invention shown complete with the IV optional window 119 with hole 120, hand mitten 111 having open end 115 including an elastic 113 and closed end 117. Likewise FIG. IB is a perspective view of the wrist & hand full cover embodiment of the subject invention complete with the optional IV window 119 with hole 120, hand mitten 111 having open end 115 including an elastic 113 and closed end 117.

The disposable full cover embodiment of the invention for protecting an arm (upper appendage) that is casted or bandaged in any region from the fingers-to-wrist is shown as 100 in FIG 1A and FIG IB. As illustrated in FIG 1A and FIG IB, the elastic band 113 is ultrasonically welded to the plastic protective sleeve 111 to create the opening hole 115 of the invention. Said opening hole 115 has a diameter that is less than the diameter of the appendage to be protected. In this embodiment designed for protecting the upper appendage the user's hand is inserted through said opening hole 115. The invention is then slid over the cast/bandaged arm portion extending the protective sleeve 111. Said opening hole 115 stretches to accommodate the size and shape of the user's arm while creating a watertight seal. The length of the protective sleeve 111 can vary. The embodiment of the invention shown in FIG 1A and FIG IB can be longer to provide protection from the user's fingers to the elbow. The system is designed so that it can be easily applied by patients with full use of only one arm (upper appendage).

FIG. 2A is an isometric view of the arm to elbow partial cover embodiment of the subject invention with the user's hand 299 shown extending through the opening. The optional IV window 219 with hole 220 in the glove 211 having a pair of open ends 215 and elastic 213 at each end. Glove 211 is designed to snugly yet comfortably fit fingers 299. Similarly FIG. 2B is an isometric view of the arm to elbow partial cover embodiment of the subject invention not in use.
The optional IV window 219 with hole 220 in the glove 211 having a pair of open ends 215 and elastic 213 at each end. The partial cover embodiment of the invention for protecting a casted or bandaged region on the upper appendage is shown as 200 in FIG 2A and FIG 2B. As illustrated in FIG 2A, the patient's hand 221 is inserted in one opening hole 215 and exuded through the opening hole 215 on the opposite end. The partial cover embodiment shown in FIG 2A and FIG 2B can be extended to protect the upper appendage from the wrist to the shoulder.

FIG. 3 is an isometric view of the neck protecting embodiment shown complete with elastic band 313 near opening hole 315 optional intravenous therapy window 319 and concomitant hole 320 for the IV or IV Pec line. The neck protecting embodiment of this invention is shown as 300 in FIG 3. The elastic band 313 is ultrasonically welded to each end of the protective sleeve 311 to create two openings that each have a diameter less than the diameter of the user's neck. The patient uses this embodiment by sliding both of the opening holes 315 over their head and onto their neck. The diameter of the opening hole 315 expands to allow the patient to slide the invention over their head and create a watertight seal around the patient's neck. This embodiment protects any bandaged portion of the patient's neck from shower water while in use.

FIG. 4 is an isometric view of the midsection protecting embodiment of the subject invention complete with plastic protective sleeve 411, elastic band 413, ingress and egress opening hole 415. The optional IV or IV Pec window is also shown in this embodiment.

The midsection protecting embodiment of this invention is shown as 400 in FIG 4. The elastic band 413 is ultrasonically welded to each end of the protective sleeve 411 to create two openings that each have a diameter less than the diameter of the user's torso. This mid-section torso embodiment also includes an optional pocket (not shown) on the inside surface facing the skin a for housing a medical device such as an insulin pump or pocket health monitor.

The invention is applied by the patient by placing both feet through both of the opening holes 415. The entire invention is slid above patient's waist and secured around patient's midsection. Said opening holes expand to create a watertight seal around patient's midsection.
FIG. 5A is an isometric view of the foot & leg full cover embodiment of the subject invention complete with foot and leg plastic protective sleeve 511, elastic band 513, ingress egress opening hole 515 and closed end 517 for the toes. Also shown is IV/IV-PEC therapy window 519 with concomitant hole 520 for the intravenous line if the case admits one. Likewise FIG. 5B is an isometric view of the upper thigh to ankle partial embodiment complete with sleeve 511 with a pair of open ends 515 each with elastic 513, IV/IV-PEC therapy window 519 with concomitant hole 520 for the intravenous line if the case admits one.

The full cover embodiment of the invention designed for leg (lower appendage) protection is shown in FIG 5A, and operates similar to the embodiment designed for arm protection. The foot of the patient is inserted into the system with the opening hole 515 taking the size and shape of the leg (lower appendage). The closed end 517 is shaped like a sock and covers the patient's foot when in use.

The partial cover embodiment of the invention designed for leg protection is illustrated in FIG 5B. This embodiment can be used to protect any portion of the patient's leg from the ankle to the upper thigh. The opening hole 515 has a diameter that is less than the diameter of the patient's leg when the invention is not in use. The patient uses this embodiment by putting their foot through both of the opening holes 515. The lower opening hole remains near the patient's ankle, while the higher opening is adjusted on the patient's leg to cover the water protected region.

FIG. 6 is an isometric view of the head cap 625 embodiment of this invention complete with head covering 625 and elastic 613 on the open end of the head cover 625 for obviating accidental slippage. The embodiment of the invention designed to protect parts of the head and scalp from water is best shown in FIG 6. The elastic band 613 is ultrasonically welded to the plastic protective cap 625 creating an opening hole 615 that is smaller than the diameter of the patient's head.

This embodiment of the system is also characterized by flexible plastic in a tubal shape with only one opening, which creates a water tight seal between the appendage and the system. Since some of the components of this invention such as head embodiment 600 are amenable to injection molding process, the inventor
is please to provide the following description to complete the teaching for a
person of average skill in the art.

FIG. 7A is an isometric view of the forearm, elbow and aft arm
embodiment of the subject invention shown here complete with Plastic sleeve for
shower/water protection 711, Elastic Band 713, Intravenous (IV)/IV Pec
Therapy Hole 720 Access or donning Holes 735 & IV/Pec Chord access hole 739.

FIG. 7B is an isometric view of the arm and elbow embodiment of
FIG. 7A in straight position of arm depicted complete with Plastic Protective
Sleeve 711, Elastic Band 713, Intravenous (IV) or IV Pec Therapy Hole 720
Access or donning Holes 735, and IV or IV Pec Chord access hole 739.

FIG. 8 is an isometric view of the midsection embodiment of the
subject invention, also showing a pocket for housing a monitor and a window or
patch for the IV/IV-PEC line or chord for the monitor or the like device. Also
show in this embodiment are Plastic Protective Sleeve 811, Elastic Band 813,
Donning access 815 Intravenous IV/PEC Therapy Window 819, Intravenous
IV/PEC Therapy Hole 820, Pocket 850 to hold or house insulin pump or
medical monitor, Three closed sides of pocket 855, Open side of pocket for access
860 and Pocket affixing means 870 such as stitching, glue, ultrasonic bond or
thermal impulse heating and sealing or any equivalent process or affixing means.

Injection molding is a process that has been in use since the 1920s and
provides versatility almost unmatched in the mass production of any material. It
requires that melted plastic be forcefully injected into relatively cool molds. As
the plastic begins to harden, it takes on the shape of the mold cavity and, when
cool, requires few post molding operations. Other advantages of this process
include its speed of production and the ability to simultaneously manufacture
multiple parts.

Blow molding in the production of plastic shapes is a form of extrusion, a
major technique in the plastics industry. Extrusion is used to push a molten tube,
called a parison, into a bottle-shaped mold. Compressed air then forces the
parison against the cold walls of the mold, hence the term "blow molding". Molds are generally side fed, with the thickness controlled by a tapered mandrel (core) or a variable-orifice die.

Continuous extrusion is possible by the use of multiple blow molds. Potential problems that might arise during the development of Safe-N-Sound
should be amenable to resolution through normal product testing and refinement processes, after which we would anticipate the product, could be produced routinely. However, we also recommend that an interested company should be allowed to do their own form of testing and marketing and to provide modification suggestions.

ASSEMBLY USE AND OPERATION

The use of this invention is very simple even intuitive because it comes in a variety of shapes that are approximately the same as the appendage it is designed to protect. An appendage in need of shielding is placed in the opening of the device and the device is then extended along the length of the appendage. Another embodiment of the system is characterized by flexible plastic in a cylindrical shape with openings on both ends. Embodiments of this invention can also include an IV/PEC window opening in the cylinder wall for the extension of the IV/PEC Insert. In the preferred embodiment all openings of this embodiment were ultrasonically welded with elastic to create a water tight seal when in use, but in practice any affixing means known in the prior art such as stitching, glue, ultrasonic bond or thermal impulse heating and sealing or any equivalent process or affixing means may be employed for any particular embodiment.

The embodiment of the invention used for protecting IV therapy sites on a patient includes the optional IV/PEC therapy window (119, 219 ... etc) as illustrated in FIG 1A, FIG 1B, FIG 2A, FIG 2B, FIG 5A, and FIG 5B, 7A, 7B and 8. The IV/PEC therapy window is created by cutting a rectangular section out of the protective sleeve. A strip of polyurethane film is then ultrasonically welded to cover the rectangular section. A small hole (120, 220 ... etc) is then placed in said polyurethane film to allow access for the IV/PEC therapy tubing. The IV therapy window is an optional part of this invention.

Typically this invention is single use disposable type. It can be made in a variety of sizes and colors to suit the needs and aesthetics of everybody including, children ladies and elderly. The IV or IV Pec therapy window (119, 219 ... etc) of this invention is used as follows. Before applying the invention to the appendage the patient's intravenous tube is first disconnected from the supply line and sealed using a heparin lock.
The IV/PEC insert is left in place the patient's appendage remains in place. The protective sleeve (111, 211 ...etc) is placed over the appendage receiving the IV therapy. The upper most opening hole (115, 215 ... etc) is expanded and placed over the IV insert. The end of said IV insert is maneuvered from inside the protective sleeve (111, 211 ...etc) to the outside of said protective sleeve (111, 211 ...etc) through the hole (120, 220 ...etc) in the IV or IV Pec therapy window (119, 219 ...etc). The diameter of said hole in the IV/PEC therapy window hole (120, 220 ...etc) is smaller than the diameter of the IV/PEC insert tube, allowing the window to conform to the shape of the tube and creating a waterproof seal. The seal at the opening hole (115, 215 ...etc) of the invention are also waterproof allowing the patient to take a shower without fear of wetting or damaging the connection between the IV or IV-PEC Insert and the arm. Any cast or bandage on the patient's arm will also be shielded from water when this embodiment is applied over it. The waterproof seal can be readily manufactured with ultrasonic welding technology or thermal sealing by timed impulse of heat well known to a person of average skilled in the art.

The device has a multitude of sizes so that it can fully cover appendages on a variety of body types. The term appendage as used herein refers to a forearm and arm (upper appendage), leg and thigh (lower appendage), neck, midsection or torso, and head. The full cover cast protecting embodiment of the hygiene system can also be used to protect bandaged areas that are required to stay dry. This embodiment of the invention has a tubular shape with an opening only on one end. The closed end of the system is either mitten shaped or sock shaped, to fit over the user's hand or foot. The main portion of the system is made of plastic, with an elastic band ultrasonically welded to the plastic at said open end. The elastic portion of the invention creates an opening at said end with a diameter that is much smaller than the diameter of the protected appendage when not in use. When the casted appendage is placed in the system through said end said opening conforms to the size and shape of the appendage creating a watertight seal. The length and size of the protective sleeve of the invention can vary depending on the appendage protection desired. Medical shower systems for use on the arm can range from finger-to-wrist length to finger-to-shoulder length. Hygiene systems for use on the leg can range from toe-to-ankle length to toe-to-full leg length.
A partial cover embodiment of this system can be used for keeping an appendage dry while allowing the user the unhindered use of their extremities. When used on a patient's arm this embodiment can be of any length to secure dryness from the patient's wrist up to the patient's shoulder. The partial cover embodiment is similar to the full cover embodiment with the exception that there are openings on opposite ends of the system. The additional opening gives the system an open tubular shape. As in the full cover embodiment the openings of the system are expandable, but initially smaller than the diameter of the covered appendage, allowing the partial cover to be placed on an arm in a sleeve like manner and producing a waterproof seal. This embodiment can also be enlarged appropriately to meet the dimensions of a user's leg or torso. This embodiment will also range in length so that only the necessary portion of the appendage is covered. When used on the patient's leg this embodiment can be of any length to secure dryness from the patient's ankle to the patient's upper leg.

The IV-Pec protection embodiment of this invention has a design such that a waterproof seal is created over a cast or bandage and an IV/Pec therapy site, while still allowing the user access to the IV/Pec tubing. The IV/Pec protection embodiment has the same shape as either the full cover or partial cover embodiments with an additional opening along the cylindrical wall which serves as an IV/Pec window which is made by placing a hole in the cylindrical wall and ultrasonically welding a polyurethane film to cover said hole. Said polyurethane film has a small opening in the center for the passage of the IV/Pec tubing sealed by a Heparin Lock (Hep-Lock). The patient's appendage and attached IV/Pec tube are inserted through the first opening hole in the protective sleeve. In a partial cover embodiment the patient's extremities are extended through the second opening hole. The IV/Pec tube is extended from within the interior of the protective sleeve to the exterior of said protective sleeve through a small hole in the polyurethane film of the IV/Pec window. Said small hole in said polyurethane film has a diameter that is less than the diameter of the IV/Pec tubing. When said IV/Pec tubing is inserted through the IV/Pec window the polyurethane expands to accommodate said tubing and a watertight seal is created.

The applicant has described the essence of this invention. While this invention has been described with reference to an illustrative embodiment, this
description is not intended to be construed in a limiting sense. Various modifications and combinations of the illustrative embodiments as well as other embodiments of the invention will be apparent to a person of average skill in the art upon reference to this description. Skilled artisan will be able to produce the intended invention with the most efficient dimensions of any of the embodiments contained within this description.

VARIATIONS OF INVENTION

Due to the simplicity and elegance of the design of this invention designing around it is very difficult if not impossible. Nonetheless many changes may be made to this design without deviating from the spirit of this invention. Examples of such contemplated variations include the following:

1. The shape and size of various members may be modified to accommodate a variety of body parts/users of different age, gender and health etc.
2. The color, aesthetics, materials, and thickness of the cast cover or the securing device may be varied
3. Securing device elastic may be replaced by some other type of pleated fasteners.
4. Additional complimentary and complementary functions and features may be added.
5. Other accessories may be added such as a housing for holding a medical therapy or monitoring device.
6. The use of the device may include appendage protection during inclement weather.
7. Different affix means may be employed for affixing pockets, patches, access holes donning holes etc.
8. In addition to IV the device may be adopted for IV PEC
9. Examples of such affixing means include but are not limited to ultrasonic welding, thermal sealing by timed impulse of heat, gluing, stitching or any other affixing means which achieves the same functionality. Other changes such as aesthetics and substitution of newer materials as they become available, which substantially perform the same function in substantially the same manner with substantially the same result without deviating from the spirit of the invention may be made.
Following is a listing of the components used in the best mode preferred embodiment and the alternate embodiments for use with OEM as well as retrofit markets. For the ready reference of the reader the reference numerals have been arranged in ascending numerical order. It should be noted that in this legend of reference numbers the first digit denotes the figure number and the remaining two digits connote the component reference number.

110 Embodiment of Figure 1 generally
111 Plastic Protective Sleeve
113 Elastic Band
115 Opening Hole
117 Closed End
119 Intravenous (IV) or IV Pec Therapy Window
120 Intravenous (IV) or IV Pec Therapy Hole
210 Figure 2 generally
211 Plastic Protective Sleeve
213 Elastic Band
215 Opening Hole
219 Intravenous (IV) or IV-PEC Therapy Window
220 Intravenous (IV) or IV-PEC Therapy Hole
299 User's Hand
310 Figure 3 generally
313 Elastic Band
315 Opening Hole
319 Intravenous (IV) or IV-PEC Therapy Window
320 Intravenous (IV) or IV-PEC Therapy Hole
410 Figure 4 generally
411 Plastic Protective Sleeve
413 Elastic Band
415 Opening Hole
419 Intravenous (IV) or IV-PEC Therapy Window
420 Intravenous (IV) or IV-PEC Therapy Hole
510 Figure 5 geometry
511 Plastic Protective Sleeve
513 Elastic Band
Opening Hole

Closed End

Intravenous (IV) or IV-PEC Therapy Window

Intravenous (IV) or IV-PEC Therapy Hole

Figure 6 generally

Figure 7 generally

Plastic Protective Cap

Elastic Band

Donning access

Intravenous (IV) or IV-PEC Therapy Window

Intravenous (IV) or IV-PEC Therapy Hole

Figure 8 generally

Plastic Protective Sleeve

Elastic Band

Pocket generally to hold or house insulin pump or medical monitor

Three closed sides of pocket

Open side of pocket for access

Pocket affixing means such as stitching, glue, ultrasonic bond or thermal impulse heating and sealing or any equivalent process or affixing means.
DEFINITIONS AND ACRONYMS

A great care has been taken to use words with their conventional dictionary definitions. Following definitions are included here for clarification.

3D = Three Dimensional
DIY = Do It Yourself
Interface = Junction between two dissimilar entities
IV = Intravenous therapy patch and line
IV-PEC = An alternate embodiment of Intra Venus
MTBF = Mean Time Between Failures
OEM = Original Equipment Manufacturer
System = Synergistic cooperation of components

While this invention has been described with reference to illustrative embodiments, this description is not intended to be construed in a limiting sense. Various modifications and combinations of the illustrative embodiments as well as other embodiments of the invention will be apparent to a person of average skill in the art upon reference to this description. It is therefore contemplated that the appended claim(s) cover any such modifications, embodiments as fall within the true scope of this invention. What is claimed as being new and non-obvious and worthy of protection by United States letters PATENT is as follows.
The Inventor Claims:

1. A cast and intravenous medical shower system for protecting a body part comprising:
   a) a tubular plastic sleeve in the shape of a body part with at least one open end; and
   b) an elastic band around said open end of said plastic sleeve.

2. The cast and intravenous medical shower system for protecting a body part of claim 1 wherein said elastic band is ultrasonically welded to said open end of said plastic sleeve.

3. The cast and intravenous medical shower system for protecting a body part of claim 1 wherein said elastic band is thermally sealed by times impulse to said open end of said plastic sleeve.

4. The cast and intravenous medical shower system for protecting a body part of claim 1 wherein said plastic sleeve has both ends open, each having said elastic band ultrasonically welded to each said open end of said plastic sleeve.

5. The cast and intravenous medical shower system for protecting a body part of claim 4 wherein the diameter of the elastic band in its natural state is smaller than the diameter of the sleeve.

6. The cast and intravenous medical shower system for protecting a body part of claim 4 wherein the diameter of the elastic band in its natural state is smaller than the diameter of the protected body part.

7. The cast and intravenous medical shower system for protecting a body part of claim 1 wherein said body part is a mammal body part.

8. The cast and intravenous medical shower system for protecting a body part of claim 7 wherein said body part is a human body part.
9. The cast and intravenous medical shower system for protecting a body part of claim 7 wherein said mammal body part is a pet body part.

10. The cast and intravenous medical shower system for protecting a body part of claim 8 wherein said body part is a hand.

11. The cast and intravenous medical shower system for protecting a body part of claim 8 wherein said body part is a human hand.

12. The cast and intravenous medical shower system for protecting a body part of claim 8 wherein said body part is a human torso mid section optionally includes a pocket for housing a medical therapy monitoring device.

13. The cast and intravenous medical shower system for protecting a body part of claim 8 wherein said body comprises a human foot and ankle.

14. The cast and intravenous medical shower system for protecting a body part of claim 8 wherein said body comprises a human elbow and arm.

15. The cast and intravenous medical shower system for protecting a body part of claim 8 wherein said body part is a human leg and foot and said plastic sleeve includes an approximate right angle in the range of 80 - 100 degrees.

16. The cast and intravenous medical shower system for protecting a body part of claim 1 wherein said sleeve comprises an intravenous therapy window.

17. The cast and intravenous medical shower system for protecting a body part of claim 16 wherein said intravenous therapy window comprises an intravenous therapy hole ultrasonically sealed around said intravenous therapy hole to make said seal waterproof.
18. The disposable cast and intravenous medical shower system for protecting a body part of claim 17 wherein said body part is a midsection torso and includes a pocket as a means for housing a medical therapy or monitoring device during said shower.

19. A system for protecting an appendage from getting wet during a shower or bath comprising a tubular plastic sleeve in the shape of the appendage with openings on two ends for inserting the appendage into said plastic sleeve, said openings being created by ultrasonically welding an elastic band to the plastic sleeve so as to create an opening with a diameter that is smaller than the diameter of the protected appendage but can be expanded to receive the appendage and naturally contracts to create a waterproof seal around the appendage.

20. The system for protecting an appendage from getting wet during a shower or bath of claim 1 with the opening on the second end of the tube created by ultrasonically welding an elastic band to said second opening of the plastic sleeve to create an opening with a diameter that is smaller than the diameter of the protected appendage so as to create a waterproof seal around a protected portion of the appendage when the appendage is inserted through both openings.

21. The system for protecting an appendage from getting wet during a shower or bath of claim 1 with the second end of the plastic sleeve comprising waterproof plastic designed to enclose a human hand and shaped as the hand enclosing section of a mitten.

22. The system for protecting an appendage from getting wet during a shower or bath system of claim 1 with the second end of the plastic sleeve comprising water-proof plastic designed to enclose a human limb and sealed close and shaped in the form of said human, wherein said sleeve comprises an intravenous therapy window and wherein said intravenous therapy window comprises an intravenous therapy hole ultrasonically sealed around said intravenous therapy hole to make said seal waterproof.
FULL LEG (UPPER THIGH TO ANKLE)

FIG. 5-B

FOOT & LEG CLOSED POSITION

FIG. 5-A
HEAD CAP

FIG. 6

600
POCKET TO HOLD INSULIN PUMP OR MEDICAL MONITOR

FIG. 8
A. CLASSIFICATION OF SUBJECT MATTER

<table>
<thead>
<tr>
<th>IPC(8)</th>
<th>USPC</th>
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<td>A61F 5/00</td>
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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)

- IPC(8) - A61F 5/00, 5/37 (2010.01)
- USPC - 2/16, 59, 61, 238, 242, 243.1; 128/845-46, 849, 856, 878-79, 881-82; 602/3-6, 20-27; 604/174, 177, 179-80

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

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

- MicroPatent, Google Patents, Google Scholar

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>
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<tr>
<td>X</td>
<td>US 5,761,746 A (BROWN) 09 June 1998 (09.06.1998) entire document</td>
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<td>Y</td>
<td>US 2008/0108964 A1 (EDWALL) 08 May 2008 (08.05.2008) entire document</td>
<td>2-6, 12-20, 22</td>
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<td>Y</td>
<td>US 6,047,403 A (JUOZAITIS) 11 April 2000 (11.04.2000) entire document</td>
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Further documents are listed in the continuation of Box C.

* Special categories of cited documents:
  - "A" document defining the general state of the art which is not considered to be of particular relevance
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Date of the actual completion of the international search 31 December 2010

Date of mailing of the international search report 11 JAN 2011

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