**ABSTRACT**

The present application includes a flexible sock system for containing inadvertently released concrete from the tubing of a pump truck. One or more socks are selectively located on the boom and tubing to define a guarded area used to contain cement that is leaking or bursts out of the tubing. The socks may include a sleeve and or a flat member. The flat members are used to enclose a space around bends or other flexible areas. A series of apertures are used to cinch the flat member closed. The sleeve is used primarily around the tip hose of the pump truck to increase control of the tip hose and visibility of the tip hose location.
FLEXIBLE SAFETY SOCK SYSTEM

BACKGROUND

[0001] 1. Field of the Invention
[0002] The present application relates generally to a protective covering, and more particularly to a flexible sock used to surround pressurized pipes to prevent injury and damage to people and property.
[0003] 2. Description of Related Art
[0004] A common method used to move wet concrete in large scale pouring projects is to use a pump truck. Often projects are of such size or are located in difficult areas to reach with conventional gravity fed methods. A pump truck pressurizes the concrete through a series of tubes or pipes sequentially joined together. The tubes or pipes are supported by a plurality of boom arms which are operably connected along joints. The boom is used to elevate the concrete along a designated path until it reaches the tip hose at the pouring location. It is common that the boom is operated so as to pass over people, structures, vehicles, and so forth. A worker is usually located at the tip hose to provide directed directing of the concrete as it exits the tube.
[0005] Conventional pump truck pouring methods have many disadvantages. One disadvantage of using a boom and pump truck to pressurize the wet concrete is the tendency for the tubes/pipes to leak or burst from the pressure. When this happens, concrete falls to the ground and can damage property or hurt people. A common location on the boom for this to occur is at the joints of the boom where the tubing has to bend and flex. However, any joint for the tubing or pipes are susceptible to bursting and leakage. Another disadvantage of conventional pouring methods is an inability for the worker directing the tube pouring the concrete to fully grasp the tip hose. Hands can become wet and surfaces become slippery. Furthermore, a lot of pours occur at night in the dark. It becomes difficult to provide adequate lighting at night especially where the slab being poured is quite expansive in size. The color of the concrete and tip hose can easily blend into the darkness and create a hazard for workers when the location of the tip hose is undetermined. Injury can result from running into the tip hose.
[0006] It is desirable to have a system that is configured to overcome the disadvantages of conventional concrete pouring methods. Although some strides have been made, considerable shortcomings remain.

DESCRIPTION OF THE DRAWINGS

[0007] The novel features believed characteristic of the application are set forth in the appended claims. However, the application itself, as well as a preferred mode of use, and further objectives and advantages thereof, will best be understood by reference to the following detailed description when read in conjunction with the accompanying drawings, wherein:

[0008] FIG. 1 is a perspective view of a flexible safety sock system according to the preferred embodiment of the present application.
[0009] FIG. 2 is a side view of a tip hose sock used in the flexible safety sock system of FIG. 1.
[0010] FIG. 3 is a side view of an elbow sock used in the flexible safety sock system of FIG. 1.
[0011] FIG. 4 is a side view of a tip hose elbow sock used in the flexible safety sock system of FIG. 1.
[0012] FIG. 5 is an enlarged perspective view of mesh material used in the flexible safety sock system of FIG. 1.
[0013] While the system and method of the present application is susceptible to various modifications and alternative forms, specific embodiments thereof have been shown by way of example in the drawings and are herein described in detail. It should be understood, however, that the description herein of specific embodiments is not intended to limit the application to the particular embodiment disclosed, but on the contrary, the intention is to cover all modifications, equivalents, and alternatives falling within the spirit and scope of the process of the present application as defined by the appended claims.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0014] Illustrative embodiments of the preferred embodiment are described below. In the interest of clarity, not all features of an actual implementation are described in this specification. It will of course be appreciated that in the development of any such actual embodiment, numerous implementation-specific decisions must be made to achieve the developer’s specific goals, such as compliance with system-related and business-related constraints, which will vary from one implementation to another. Moreover, it will be appreciated that such a development effort might be complex and time-consuming but would nevertheless be a routine undertaking for those of ordinary skill in the art having the benefit of this disclosure.

[0015] In the specification, reference may be made to the spatial relationships between various components and to the spatial orientation of various aspects of components as the devices are depicted in the attached drawings. However, as will be recognized by those skilled in the art after a complete reading of the present application, the devices, members, apparatuses, etc. described herein may be positioned in any desired orientation. Thus, the use of terms to describe a spatial relationship between various components or to describe the spatial orientation of aspects of such components should be understood to describe a relative relationship between the components or a spatial orientation of aspects of such components, respectively, as the device described herein may be oriented in any desired direction.

[0016] The system in accordance with the present application overcomes one or more of the above-discussed problems commonly associated with conventional concrete pumping methods. Specifically, the flexible safety sock system of the present application is configured to contain concrete inside a guarded area in the event of a bursted/leaking pipe while in operation. The system is also configured to improve operator handling of the tip hose by including a handle. Furthermore, the system is configured to include a visibility strip (i.e. reflective portions) configured to help workers identify the location of the tubing and sock. These and other unique features of the device are discussed below and illustrated in the accompanying drawings.

[0017] The device and method will be understood, both as to its structure and operation, from the accompanying drawings, taken in conjunction with the accompanying description. Several embodiments of the system are presented herein. It should be understood that various components, parts, and features of the different embodiments may be combined together and/or interchanged with one another, all of which are within the scope of the present application.
even though not all variations and particular embodiments are shown in the drawings. It should also be understood that the mixing and marching of features, elements, and/or functions between various embodiments is expressly contemplated herein so that one of ordinary skill in the art would appreciate from this disclosure that the features, elements, and/or functions of one embodiment may be incorporated into another embodiment as appropriate, unless otherwise described.

[0018] The flexible safety sock system of the present application is illustrated in the associated drawings. The system includes any one of a number of different sock members configured to wrap around and flex with the tubing. Each member is configured to operate individually or in combination with each other to secure different sections of the tubing as used on a boom of a pumper truck. Each is made from a similar material which is mildew and fade resistant and has antimicrobial protection to help prevent the growth of stains and odor-causing bacteria.

[0019] Referring now to the drawings wherein like reference characters identify corresponding or similar elements in form and function throughout the several views. FIGS. 1-5 in the drawings illustrate flexible safety sock system 101. System 101 is illustrated with a pumper truck 99, including a boom 97 containing tubing 95. Tubing 95 is seen exiting boom adjacent joint E. A series of joints (Joints A-E) are located at each bending point in boom 97. Tubing 95 may be routed within boom 97 sections or be externally attached to each boom section. Therefore, system 101 may be either coupled directly to boom 97 or tubing 95 depending on where the tubing is located. It is important that system 101 be located so as to capture the releasing of any concrete from tubing 95. System 101 includes different members that are flexible and selectively adjustable to the size of tubing 95 and the tip hose.

[0020] System 101 may include any number of the sock embodiments depicted in FIGS. 2-4. In FIG. 2, tip hose sock 103 is illustrated. Tip hose sock 103 is depicted in FIG. 1 around the tip hose. Sock 103 is configured to surround a portion of the tip hose in communication with the pump truck. Pressurized concrete is pumped through tubing 95 and exits the tip hose. The tip hose is used to release and direct the concrete exiting the tubing. An operator handles the tip hose and provides control to the tip hose as the cement exits. Sock 103 is a continuous sleeve having two opposing open ends, namely a first end 105 and a second end 107. The second end is inserted over and around the tip hose prior to the first end. The area defined within sock 103 between ends 105 and 107 is the guarded area. Sock 103 is configured to keep concrete contained within the guarded area.

[0021] Sock 103 is configured to provide a user/operator greater control over the tip hose. The surface of the tip hose can become wet and slippery making it hard to handle with the pressurized concrete exiting. Sock 103 optionally includes a handle 109. Handle 109 is coupled to a portion of sock 103 and is configured to increase the degree of control experienced by an operator. The operator may grasp the handle to better control the tip hose. Handle 109 is located any distance away from first end 105 ideally to a comfortable height for the operator. In some embodiments, handle 109 is adjustable in location.

[0022] Sock 103 may also optionally include one or more visibility strips 111. Strips 111 are coupled to an exterior surface of sock 103 and configured to notify a user of the location of the tip hose. This is especially important when work is being performed in limited visibility conditions. For example, large pours are done at night where adequate lighting can be difficult to provide. Strip 111 helps to attract attention to sock 103. Strip 111 may come in many different types of styles, including a reflective material to reflect light (as seen in FIG. 2), a battery operated light, and so forth. It is understood that sock 103 may include one or more fittings at either end 105/107 to assist in attaching itself to the tip hose.

[0023] Referring now also to FIG. 3 in the drawings, an elbow sock 201 is illustrated. Sock 201 is adapted for wrapping around portions of boom 97 on pump truck 99 to enclose a leak, a burst, or a potential location susceptible to leaks and bursts (i.e. joints of tubing 95 and areas of flexure). These are also ideally suited for wrapping around strain pipes at the junction locations. Sock 201 includes a flat member 203 having a plurality of apertures 205. Apertures 205 are coupled to member 203 around the outer edges. Apertures 205 are selectively spaced along the perimeter to permit closure of the flat member 203 into an ajustably sized sleeve. As seen in FIG. 4, sock 201 is located around joint D.

[0024] In operation, member 203 is selectively wrap around at least one of the boom and one or more tubing used for the pumping of concrete. Sock 201 is adapted for use around angled portions of the boom and tubing, such as joints A-E. Sock 201 is configured to keep leaking concrete contained within a guarded area as defined by the enclosed area within member 203. A strap or tie may be passed through apertures 205 to define the enclosed area. Opposing ends of sock 201 are tied together. Ends may be tied around tubing 95 and boom 97. An advantage of sock 201 is that multiple socks may be combined, as attached through apertures 205, to adjust to any size needed. It should be mentioned that sock 201 may further include visibility strips 111 as shown and described with sock 103.

[0025] Referring now also to FIG. 4 in the drawings, a tip hose elbow sock 301 is illustrated. Sock 301 is a combination of sock 103 and sock 201 described in FIGS. 2 and 3 of the drawings, and is configured to operate in a similar manner to each. Sock 301 includes a sleeve member 303 configured to surround a portion of the tip hose in communication with the pump truck. This is similar in form and function to that of sock 103. Sleeve member 303 is a continuous sleeve having two opposing open ends, namely a first end and a second end as seen with sock 103. Sock 301 further includes a flat member 305 coupled to an edge of the second end. Flat member 305 is configured to selectively wrap around at least one of the tubing and the boom. Member 305 is configured to include a plurality of apertures to permit closure of the flat member into an adjustably sized sleeve (as seen with sock 201). Member 305 is adapted for use around angled portions of the boom and tubing.

[0026] The operation of sock 301 is similar to that of socks 103 and 201 described previously, in that each is configured to define a guarded area internally such that escaping concrete from the tubing 95 is captured within the socks as opposed to falling to the ground, thereby causing potential property damage and injury to operators. Sleeve member 303 is configured to optionally include handle 307. Handle 307 is similar in form and function to that of handle 109. Additionally, sock 301 may optionally include visibility
strips 309 similar in form and function to that of strips 111 described with FIGS. 2 and 3.

[0027] Apertures 311 are used to selectively close member 305 around tubing 95 and boom 97. The use of member 305 allows sleeve 303 to also provide a guarded area around joint E.

[0028] Referring now also to FIG. 5 in the drawings, an enlarge view of the surface of socks 103, 201, and 301 is illustrated from the described socks are composed of a mesh material configured to be strong and flexible to withstand the abrasive nature of the concrete and the mobility of the pumping truck. It is important to note that the visibility strips disclosed herein may be separate members selectively attached to the material of each sock or may be integrally incorporated into the mesh fabric. For example, the visibility material may be a patina, a particular surface treatment, and so forth.

[0029] Each of the described socks may be cleaned. A cleaning solution is prepared by using 1 tbsp. liquid dish detergent and 2 tbsp. of household bleach mixed in a gallon of water. Use a soft cloth or sponge to cleanse and rinse thoroughly with clean water and air dry. Rinse concrete and/or any solvents off daily. A thorough cleaning is needed only once or twice yearly for moderate use or more for heavy use.

[0030] The current application has many advantages over the prior art including at least the following: (1) easy to clean material; (2) increased visibility; (3) optional handle to provide better control to an operator of the tip hose; and (4) preventing of damage or harm from the leaking or bursting of tubing carrying cement.

[0031] The particular embodiments disclosed above are illustrative only, as the application may be modified and practiced in different but equivalent manners apparent to those skilled in the art having the benefit of the teachings herein. It is therefore evident that the particular embodiments disclosed above may be altered or modified, and all such variations are considered within the scope and spirit of the application. Accordingly, the protection sought herein is as set forth in the description. It is apparent that an application with significant advantages has been described and illustrated. Although the present application is shown in a limited number of forms, it is not limited to just these forms, but is amenable to various changes and modifications without departing from the spirit thereof.

What is claimed is:

1. A flexible safety sock system for increasing the safety of a pump truck, comprising:
   a tip hose sock configured to surround a portion of a tip hose in communication with the pump truck, the pump truck including tubing supported by a boom for passage of concrete under pressure, the tip hose used to release and direct the concrete leaving the tubing, the tip hose sock being a continuous sleeve having two opposing open ends, namely a first end and a second end, the second end inserted over and around the tip hose prior to the first end;
   wherein tip hose sock is configured to provide a user greater control over the tip hose and enhance visibility of the tip hose in the dark.

2. The system of claim 1, wherein a fitting is coupled to at least one of the first end and the second end to secure the tip hose sock in place.

3. The system of claim 1, wherein the tip hose sock is made from a material that is mildew and fade resistant having antimicrobial protection to prevent the growth of stain and odor-causing bacteria.

4. The system of claim 1, wherein the sleeve is configured to keep leaking concrete contained within a guarded area.

5. The system of claim 1, further comprising:
   a handle coupled to the tip hose sock configured to increase the degree of control experienced by an operator.

6. The system of claim 1, further comprising:
   a visibility strip coupled to an exterior surface of the tip hose sock and configured to notify a user of the location of the tip hose sock when used with limited visibility.

7. The system of claim 6, wherein the visibility strip is made from reflective material.

8. The system of claim 1, wherein the tip hose sock includes a flat member coupled to the second end and configured to selectively wrap around at least one of the tubing and the boom, the flat member configured to include a plurality of apertures to permit closure of the flat member into a sleeve, the flat member adapted for use around angled portions of the boom and tubing.

9. The system of claim 1, further comprising:
   a flat member configured to selectively wrap around at least one of the tubing and the boom, the flat member configured to include a plurality of apertures to permit closure of the flat member into a sleeve, the flat member adapted for use around angled portions of the boom and tubing.

10. A tip hose elbow sock, comprising:
    a sleeve member configured to surround a portion of a tip hose in communication with the pump truck, the pump truck including tubing supported by a boom for passage of concrete under pressure, the tip hose used to release and direct the concrete leaving the tubing, the sleeve member being a continuous sleeve having two opposing open ends, namely a first end and a second end, the second end inserted over and around the tip hose prior to the first end; and
    a flat member coupled to the second end and configured to selectively wrap around at least one of the tubing and the boom, the flat member configured to include a plurality of apertures to permit closure of the flat member into an adjustable sized sleeve, the flat member adapted for use around angled portions of the boom and tubing.

11. The system of claim 1, wherein the sleeve member is made from a material that is mildew and fade resistant having antimicrobial protection to prevent the growth of stain and odor-causing bacteria.

12. The system of claim 1, wherein the sleeve member is configured to keep leaking concrete contained within a guarded area.

13. The system of claim 1, further comprising:
    a handle coupled to the sleeve member configured to increase the degree of control experienced by an operator.

14. The system of claim 1, further comprising:
    a visibility strip coupled to an exterior surface of at least one of the flat member and the sleeve member, and being configured to notify a user of the location of the tip hose when used with limited visibility.
15. The system of claim 14, wherein the visibility strip is made from reflective material.

16. An adjustable sock sleeve for wrapping around portions of a boom on a pump truck to enclose a leak, comprising:
   a flat member configured to selectively wrap around at least one of the boom and one or more tubing used for the pumping of concrete,
   a plurality of apertures passing through the flat member adjacent the edges, the plurality of apertures configured to permit closure of the flat member into an adjustably sized sleeve, the flat member adapted for use around angled portions of the boom and tubing.

17. The system of claim 16, further comprising:
   a visibility strip coupled to an exterior surface of at least one of the flat member and the sleeve member, and being configured to notify a user of the location of the tip hose sock when used with limited visibility.

18. The system of claim 17, wherein the visibility strip is made from reflective material.

19. The system of claim 16, wherein the flat member is made from a material that is mildew and fade resistant having antimicrobial protection to prevent the growth of stain and odor-causing bacteria.

20. The system of claim 16, wherein the flat member is configured to keep leaking concrete contained within a guarded area.

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