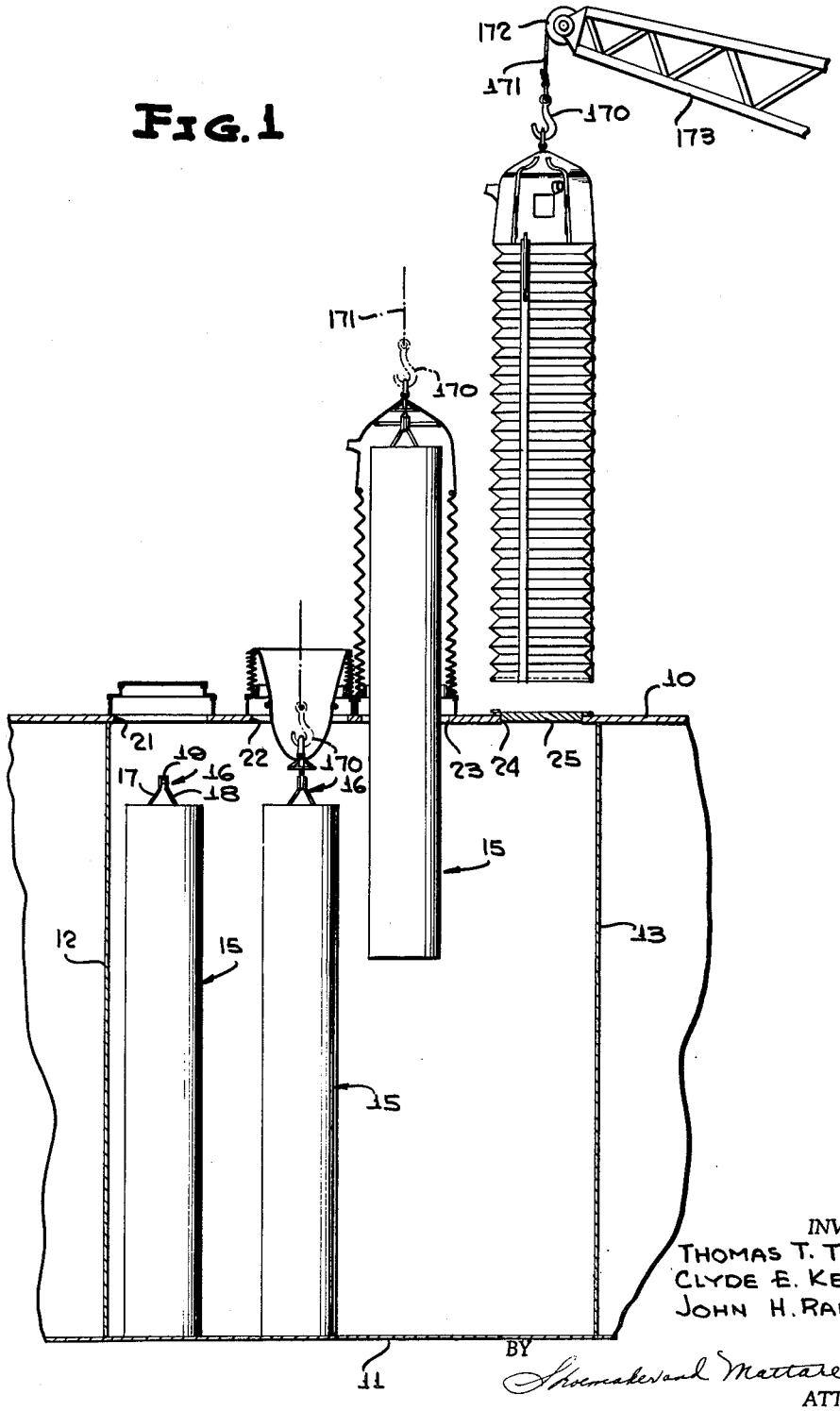
July 20, 1965 T. T. TAYLOR ETAL 3,195,943

PROTECTIVE TRANSFER COVER APPARATUS

Filed Jan. 29, 1963 4 Sheets-Sheet 1

FIG. 1



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PROTECTIVE TRANSFER COVER APPARATUS

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FIG. 2

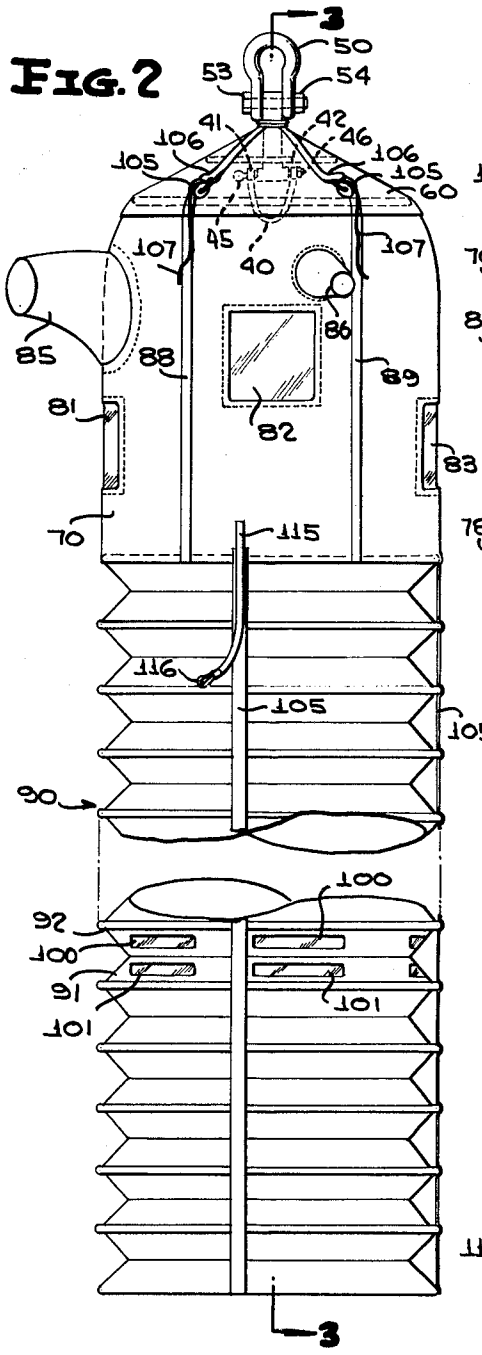
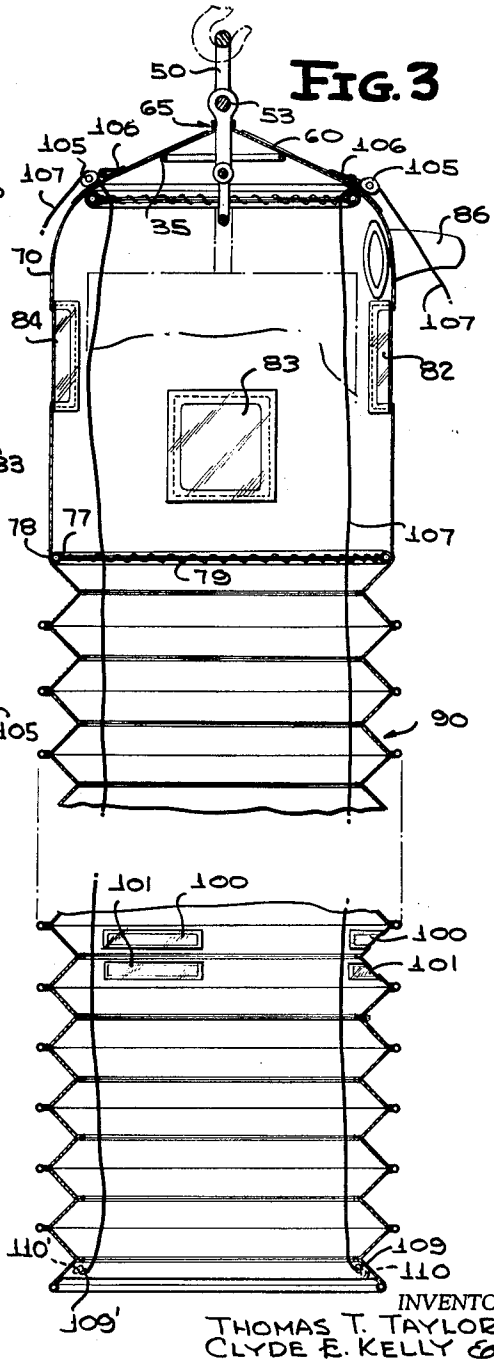


FIG. 3



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PROTECTIVE TRANSFER COVER APPARATUS

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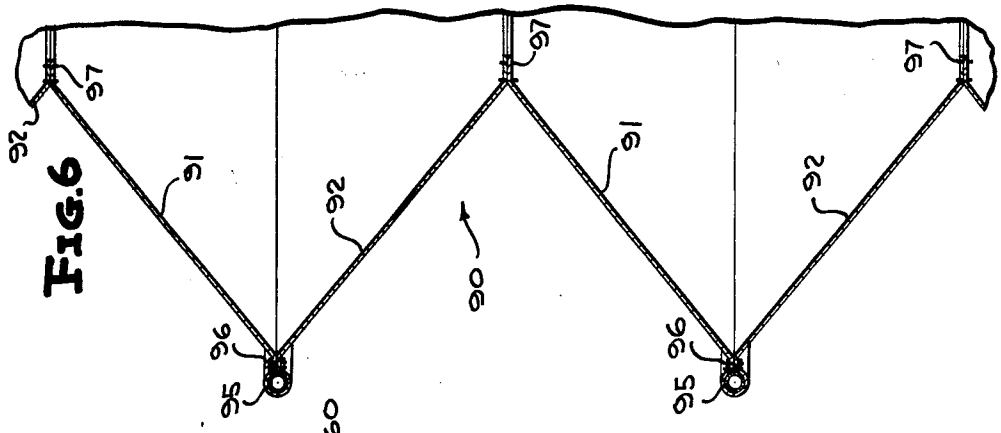


FIG. 6

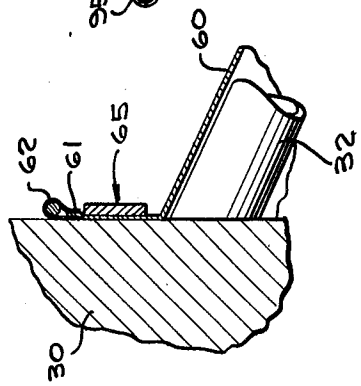


FIG. 5

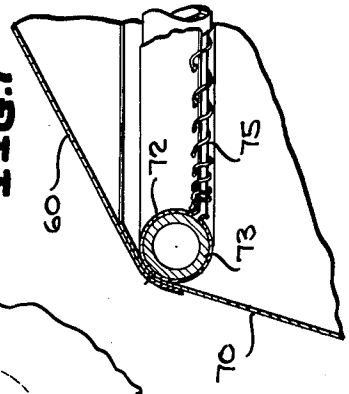


FIG. 7

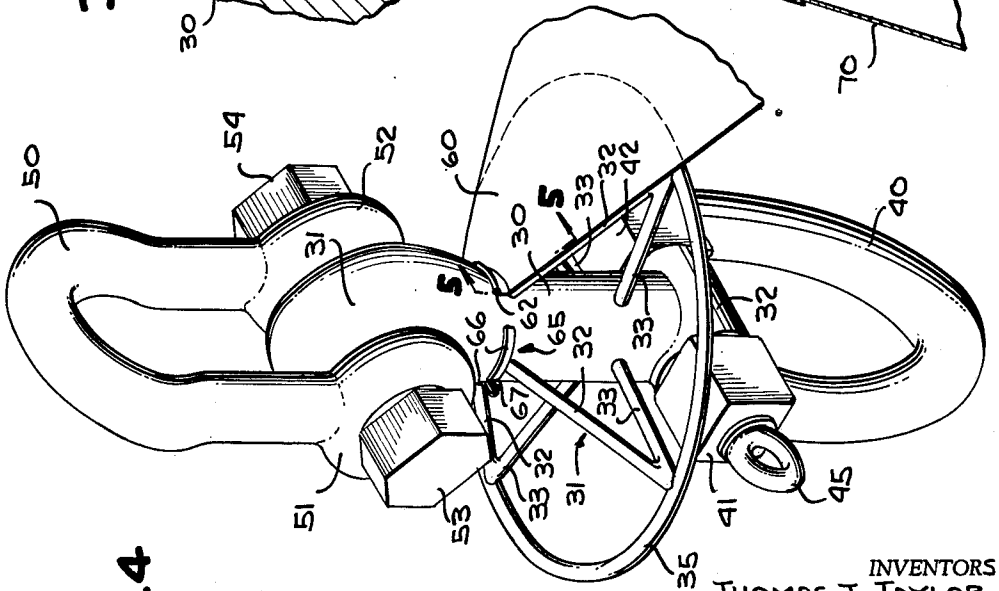


FIG. 4

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PROTECTIVE TRANSFER COVER APPARATUS

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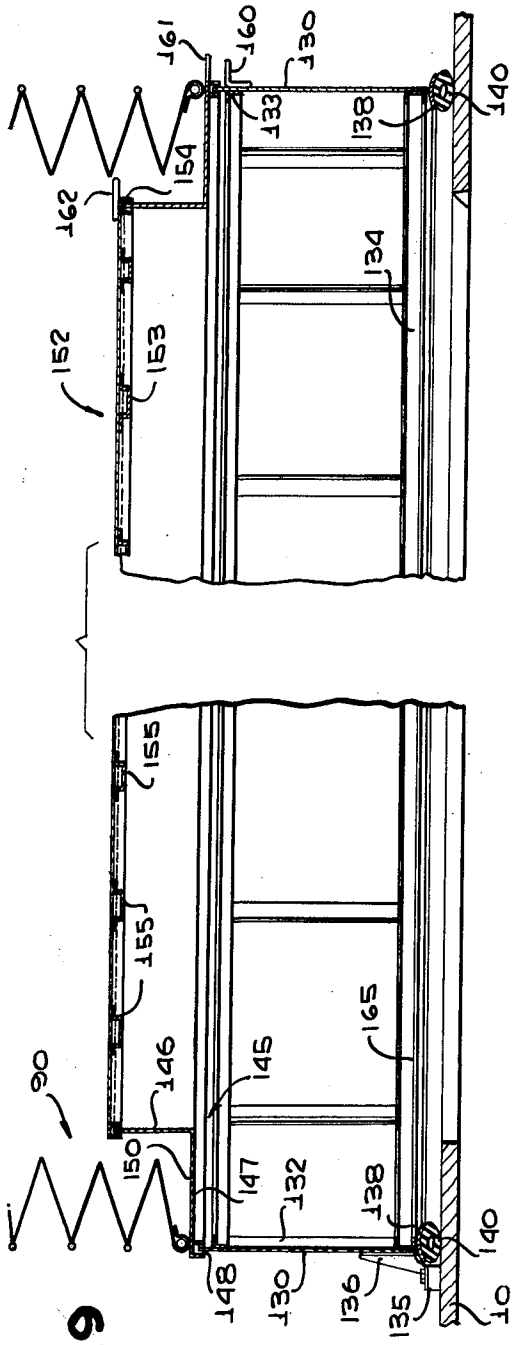


FIG. 9

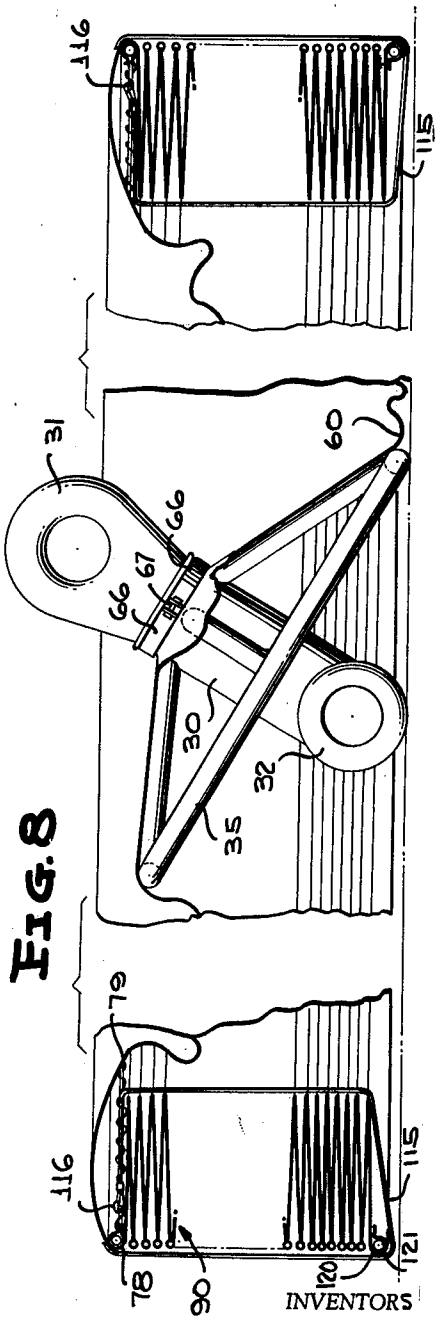


FIG. 8

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United States Patent Office 3,195,943 Patented July 20, 1965

3,195,943

PROTECTIVE TRANSFER COVER APPARATUS

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Filed Jan. 29, 1963, Ser. No. 254,668
3 Claims. (Cl. 294—131)

The present invention relates to new and novel protective transfer cover apparatus, and more particularly to a type of apparatus of this nature which is substantially weather-proof and which further incorporates a collapsible portion to permit the apparatus to be moved into certain peculiar transfer positions.

In many instances, it is necessary to transfer articles from one position to another in inclement weather or other adverse atmospheric conditions. In many instances, the article to be transferred may be of such a nature that it is important to prevent it from coming in contact with water, or it may be necessary to protect the article such that the sun for example does not beat down upon it and excessively raise the temperature thereof. It is accordingly apparent that there are many occasions when it is necessary to provide a protective transfer cover apparatus which will substantially surround and cover the article when it is being moved from one position to another without the benefit of a surrounding protective building or the like, and wherein the ambient weather conditions may be heavy rain and/or wind, for example.

The present invention is particularly directed to an arrangement which permits the protective transfer cover apparatus to be disposed in operative relationship to a suitable article when the article is in various positions. For example, in some cases, the article to be covered may be of an elongated nature and disposed in a horizontal position. In other cases, such an article may be disposed in an upright position. It is a feature of the present invention that it can be readily mounted in operative position relative to the article in either of these positions, or for that matter in any intermediate position.

The present invention also incorporates a novel construction which permits it to operate under certain conditions which may often exist regarding the storage of the articles. In many cases, the article may be stored in some sort of a depression or well wherein access is gained to the article through a suitable opening provided in an overlying supporting surface. In such instances, it is desirable to provide a protective transfer cover apparatus which will enable the apparatus to be readily secured to the article while the article is disposed below the level of said supporting surface.

In the present invention, the protective transfer cover apparatus includes a body means formed of flexible material and an intermediate collapsible portion is provided which permits the body means to be collapsed into a very compact position and furthermore which permits a portion of the body means to drop below the level of a supporting surface while the remainder of the protective transfer cover apparatus remains above the supporting surface.

In addition, the apparatus of the present invention includes a rigid framework which can be disposed below the level of such supporting surface and which includes means for attachment both to the article to be transferred as well as to suitable article transfer mechanism such as a crane or the like. It will be understood that the present apparatus will be generally employed with relatively large articles which will require the utilization of some sort of power driven lifting mechanism and the like. However, it is evident that the structure of the present invention is

equally adapted for use with smaller articles which could be manually lifted if desired.

The apparatus of the present invention also includes an auxiliary cover means which is adapted to replace a normal permanent cover associated with a hole in a supporting surface. The auxiliary cover means is utilized in combination with the aforedescribed body means so as to cooperate therewith during the transfer procedure and prevent the entry of undesired matter into the depression or well within which the article is stored.

An object of the present invention is to provide a new and novel protective transfer cover apparatus for use in protecting articles being moved from place to place as by a lifting crane or the like.

Another object of the invention is the provision of protective transfer cover apparatus which is substantially weather-proof and provides protection against the sun, wind, rain and similar conditions.

A further object of the present invention is to provide protective transfer cover apparatus which can be readily assembled and disassembled relative to an article to be transferred, and which is operative when the article must be lifted from or lowered to a level below that of a supporting surface, the apparatus serving to completely protect the article at all times.

A still further object of the invention is the provision of protective transfer cover apparatus which can be folded into a compact structural arrangement for storage purposes, but which is expandable for receiving an article of elongated dimension.

Still another object of the invention is to provide protective transfer cover apparatus which is quite simple and inexpensive in construction, and yet which is sturdy and reliable in use.

Other objects and many attendant advantages of the invention will become more apparent when considered in connection with the specification and accompanying drawings, wherein:

FIG. 1 is a view partially is longitudinal section illustrating various steps in the utilization of the apparatus of the present invention for transferring an article;

FIG. 2 is an elevational view partially broken away on an enlarged scale illustrating the body means of the present invention;

FIG. 3 is a sectional view taken substantially along line 3—3 of FIG. 2 looking in the direction of the arrows;

FIG. 4 is an enlarged perspective view partially broken away illustrating the rigid framework at the upper portion of the apparatus, along with a part of the flexible body means;

FIG. 5 is a sectional view taken substantially along line 5—5 of FIG. 4 looking in the direction of the arrows;

FIG. 6 is an enlarged sectional view through a portion of the collapsible portion of the body means of the apparatus;

FIG. 7 is an enlarged view illustrating the detail of mounting a reinforcing ring in the upper portion of the body means;

FIG. 8 is a view partially in section illustrating the manner in which the body means can be folded into a compact position for storage; and

FIG. 9 is a longitudinal section through an auxiliary cover means for use with the body means of the present invention.

Referring now to the drawings wherein like reference characters designate corresponding parts throughout the several views, there is shown in FIG. 1 a storage well which is defined by a top wall **10** which provides an upwardly facing supporting surface, a bottom wall **11**, and a pair of side walls **12** and **13**. This storage well may be of any construction and shape as will be apparent, and the storage well is adapted to receive suitable articles **15**

which are normally stored within the well. As shown, articles, 15 may comprise elongated substantially cylindrical tanks, it being apparent that any type or shape of article may be employed, although the protective transfer cover apparatus of the present invention is illustrated as defining an elongated hollow body means which is particularly adapted for receiving elongated articles such as indicated on the drawings.

The stored articles may be provided with any suitable attaching means such as indicated by reference numeral 16, and which in the present instance, comprises a pair of upstanding arms 17 and 18 which support a cross arm 19 between the upper portions thereof, all of these elements being rigidly secured to one another and suitably secured to the upper end of the associated article.

A plurality of holes 21, 22, 23 and 24 are provided through the upper wall 10, each of these holes being disposed in overlying relationship to one of the stored articles and being of such a dimension such that the stored article can be readily removed therethrough. Each of these holes is normally covered by a permanent closure member 25 such as disclosed in operative position within hole 24. This permanent cover member may be of any suitable construction so as to provide a weather-proof seal with the upper wall 10 when in operative position.

Referring now to FIGS. 2 through 6 inclusive, the construction of the protective transfer cover apparatus of the present invention will be more clearly understood. At one end portion of the apparatus, a rigid framework is provided as seen particularly in FIG. 4, this framework including a central sturdy and rigid portion 30 which may be formed of steel or the like, member 30 having an enlarged boss 31 formed at one end thereof and another enlarged boss 32 formed at the other end thereof. The central portion of member 30 is substantially cylindrical, and four equally spaced radially outwardly projecting supports 31 are secured to the central portion of member 30. Each of these supports 31 includes a downwardly projecting arm portion 32 as seen in FIG. 4 which joins with a radially outwardly extending arm portion 33 to thereby provide a substantially V-shaped support means. Each of the support means is suitably rigidly secured to portion 30 as by welding or the like, and an annular ring portion 35 is secured at spaced portions thereof to the outer ends of each of supports 31 as by welding or the like to thereby provide a rigid framework for supporting the upper part of the body means hereinafter more fully described. It will be understood that each of members 32, 33 and 35 may be of tubular construction so as to provide a high degree of strength while at the same time minimizing the weight of the rigid framework.

A lower attaching means comprises a substantially U-shaped member 40 having a pair of enlarged bosses 41 and 42 formed at the upper ends of the legs thereof. This lower attaching means is held in operative position and pivotally connected with the rigid framework by means of an I-bolt 45 which extends through suitable aligned openings provided in bosses 41, 32 and 42, the outer end of the I-bolt being threaded and receiving a nut 46 threaded thereon for retaining it in operative position.

An upper attaching means 50 is also of substantially U-shaped configuration, the lower ends of the two legs thereof comprising enlarged bosses 51 and 52. The upper attaching means 50 is detachably secured to the rigid framework by means of a bolt 53 which extends through aligned openings provided in bosses 51, 31 and 52, the outer end of bolt 53 being threaded and having a nut 54 threaded thereon for retaining bolt 53 in operative position whereby the upper attaching means 50 is pivotally attached to the rigid framework.

The body means of the present invention which is supported by the rigid framework is formed of a suitable flexible weather-proof material which in particular must be waterproof such as synthetic rubber, plastic, or any other type of material which meets these requirements and which may be formed as a relatively thin sheet of readily deformable material. The body means includes an upper substantially frusto-conically shaped portion 60 including a substantially cylindrical portion 61 which is adapted to fit snugly about the outer surface of the cylindrical portion of member 30, the upper end edge of portion 61 being doubled upon itself and surrounding an annular piece of rope or the like indicated by reference numeral 62. A clamp means indicated generally by reference numeral 65 is provided for securing portion 61 of the body means securely to the cylindrical portion of member 30, clamp means 65 being of relatively conventional construction and comprising a pair of substantially semicircular members 66 having radially outwardly extending ears at the opposite ends thereof, the adjacent ears of each of members 66 being retained in operative position by nut and bolt assemblies extending through suitable openings provided in these ears.

It is apparent that the clamping means will cooperate with the enlarged upper end edge of portion 61 which includes the rope welt 62 so as to positively prevent the body means from pulling away from the rigid framework during use of the apparatus.

Referring now to FIGS. 3 and 7, it will be seen that the lower portion of the frusto-conical portion 60 of the body means is connected as by stitching or the like to a substantially cylindrical body portion indicated by reference numeral 70, an annularly extending flap portion 72 also being connected as by stitching to the junction between members 60 and 70, member 72 having the opposite ends thereof disposed adjacent one another so as to substantially encompass a reinforcing tubular ring 73, the ring 73 being retained within flap 72 by means of lacing 75 which extends through suitable openings spaced along the adjacent edges of the opposite end portions of flap 72 as will be readily understood from an inspection of FIG. 7. With this arrangement, the tubular ring 73 formed of metal will serve to reinforce the body means and cause it to retain the desired shape while in use.

Referring particularly to FIG. 3, it will be seen that member 70 extends downwardly and at its lower end is provided with a flap portion 77 which is suitably secured thereto as by stitching, flap 77 being annular and similar to flap 72 previously described.

Flap 77 is provided for the purpose of encompassing and retaining in position a rigid tubular ring 78 similar to ring 73 but of larger diameter, ring 78 being retained in operative position by means of lacing 79 which extends through appropriate spaced openings provided in adjacent edges of the opposite portions of flap 77. It is apparent that ring 78 will further cause the body means to retain its position as shown in the drawings while suspended from the rigid framework in use.

Member 70 of the body means is provided with a plurality of spaced openings over which are suitably secured as by stitching transparent flexible material as indicated by reference numerals 81, 82, 83 and 84, these pieces of transparent material being formed of suitable plastic or the like and comprising observation ports through which an observer may examine the articles suspended within the apparatus during the transfer operation.

In addition, the portion 70 of the body means may be provided with one or more openings with which suitable access sleeves are connected. As shown, a pair of access sleeves 85 and 86 are shown, each of these sleeves being hollow and being in communication with the hollow interior of the body means such that access may be gained to the interior of the body means while in use and during the time that an article is suspended within the body means.

Suitable reinforcing means extending longitudinally of the body means may be provided, and as shown, strips of webbing 88 and 89 are suitably secured as by stitching to the outer surface of portions 70 and 60, this webbing being formed of any suitable flexible relatively strong

material such as nylon or the like. Any suitable number of strips of webbing may be provided, and in a typical example, four such strips may be provided, each strip extending between adjacent observation ports.

Extending downwardly from the portion **70** is a collapsible folding or bellows-like portion indicated generally by reference numeral **90**, and the construction of this bellows-like portion will be understood more clearly from an inspection of FIG. 6. A plurality of substantially frusto-conical shaped sections of material **91** and **92** are interconnected with one another as shown. It will be noted that the uppermost portions of each of sections **92** is wrapped around an annular spring wire ring **95** or other suitable reinforcing means, and the lowermost edge portion of each of sections **91** is wrapped around the uppermost portion of each of sections **92** and the rings **95**, the uppermost edge portions of sections **92** and the lowermost edge portions of sections **91** being secured in operative position as shown by an annular ring of stitching indicated by reference numeral **96**.

The inner peripheries of the adjacent sections **91** and **92** are secured to one another by an annular ring of stitching indicated by reference numeral **97**. It is accordingly clear that a bellows-like construction is provided which is adapted to fold up into a very compact arrangement for storage purposes and yet which is adapted to readily expand as required to accommodate an article to be received within the body means.

As indicated in FIG. 2, one or more of the sections **92** may be provided with a plurality of spaced openings over which is suitably secured transparent portions **100** to serve as observation ports. Also, one or more of the portions **91** may be provided with a plurality of spaced openings having suitable pieces of transparent material **101** secured thereover to serve as observation ports.

Means is provided for limiting the expansion movement of the collapsible portion **90** in the form of a plurality of strips of webbing **105** which are each secured as by stitching to the bottom edge of member **70** and then extend downwardly and are secured as by stitching or the like to the outer edges of sections **91** and **92** which encompass the spring rings **95**. It is apparent that these strips of webbing **105** will positively limit the expanding movement of the collapsible portion. Webbing **105** may be of the same material as the webbing previously discussed.

In many instances, the body means may be suspended in an elevated position and it may be desirable to raise or lower the collapsible portion of the body means as well as the flexible portion **70** thereof. For this purpose, a plurality of pulley blocks are connected by means of webbing portions **106** to portion **60** of the body means, lines **107** extending over said pulley blocks and thence downwardly inside of the body means as seen in FIG. 3 and finally through an opening **109** provided adjacent the bottom of the bottom of the collapsible portion **90**. It will be apparent that by manipulating the opposite end portion of each of lines **107**, the body means may be raised or lowered as desired during operation of the apparatus. Any suitable number of pulley blocks may be provided, and as illustrated, a pair of pulley blocks may be disposed on each side of the body means.

The apparatus also incorporates means for retaining the collapsible portion of the body means in its collapsed compact position for the purpose of storage, and this means may take the form of a pair of diametrically opposite strips of webbing **115** having a snap hook **116** connected to the outer end thereof. The manner in which webbing strips **115** and snap hooks **116** are utilized may be understood most clearly as seen in FIG. 8, wherein the collapsed body portion is shown in its storage position, and wherein each of the strips of webbing **115** extends downwardly on the outside of the collapsed body means, thence around the bottom thereof and upwardly within the collapsed body means and thence over the upper portion of the collapsed body means with the snap hooks **116** at the end of each of strips **115** interconnected with the lacing **79** previously discussed to thereby retain the collapsed body portion **90** in operative storage position as shown.

It will also be noted as seen most clearly in FIG. 8 that the bottommost portion of the collapsible body portion **90** is doubled over as indicated at **120** about an annular tubular reinforcing member **121** which may be of metal and the like so that the bottom portion of the collapsible body portion will readily retain its circular configuration.

Referring now to FIG. 9, an auxiliary cover means is illustrated which is adapted to be placed in overlying relationship to one of the holes in wall **10** previously described, the auxiliary cover means being used in place of the permanent cover means which is normally in the hole, the auxiliary cover means being cooperative with the body means of the apparatus as hereinafter described so as to provide complete protection.

As seen in FIG. 9, a base portion includes a vertically extending side wall **130** which may be substantially cylindrical in configuration, this wall including vertically extending reinforcing members **132** at spaced points therealong and an annular reinforcing member **133** of substantially L-shaped cross-sectional configuration is secured to the upper portion of the inner surface of wall **130** while a channel member **134** is secured to a lower portion of the inner surface of wall **130** to reinforce the side wall portion.

Support means for the base portion is indicated by reference numeral **135** and is connected to the side wall **130** by means of plates **136**. A plate **138** having a downwardly facing arcuate surface is secured to the lower portion of the side wall **130** and has secured to the under surface thereof a sealing means indicated by reference numeral **140** which may comprise a tubular member of rubber or similar material which is adapted to be deformed under the weight of the auxiliary cover means until the base support means **135** is seated on the surface of wall **10**, sealing means **140** serving to provide a fluid-tight seal relative to the portion **10**.

A first lid portion is indicated generally by reference numeral **145** and includes an annular vertically extending wall **146** which joins with an annular horizontally extending wall portion **147** having a channel portion **148** extending around the outer periphery thereof for receiving the upper edge portion of the side wall **130** of the base portion. The first lid portion is disclosed in its operative position on the lower base portion, and suitable latches may be provided for holding the first lid portion in operative position as shown. It will be noted that the upwardly facing surface **150** of wall **147** provides a surface which is adapted to receive the lower end of the collapsible portion of the body means of the apparatus previously described which is indicated in FIG. 9 schematically by reference numeral **90**. When the lower end of the body means does engage surface **150**, the weight of the body means will serve to provide an effective seal between these portions.

A second lid portion indicated generally by reference numeral **152** includes a flat disc-like plate **153** having an annular channel member **154** secured to the outer periphery thereof for receiving the upper edge portion of wall **146** of the first lid portion. The second lid portion also includes a plurality of transversely extending channel members **155** secured to the under surface thereof for reinforcing the second lid portion.

Suitable handle members indicated by reference numerals **160**, **161** and **162** are connected to the base portion, the first lid portion and the second lid portion respectively to facilitate handling of these elements. Any desired number and spacing of the handle portions may be utilized as is convenient.

It is, of course, apparent that the base portion, the

first lid portion and the second lid portion may be disassembled from one another and stowed in a more compact relationship if desired. The body means along with the rigid framework associated therewith as seen in FIG. 8 is normally stowed in a compact collapsed position, and the upper and lower attaching means may be removed from the rigid portion **30** of the framework until it is desired to employ the apparatus.

When it is desired to perform a transfer operation, the permanent cover is removed from whichever hole it is desired to operate in conjunction with, and the auxiliary cover is placed in position over this hole. The auxiliary cover is shown in this operative position in FIG. 9, wherein the permanent cover which would normally overlie the hole is indicated in phantom line by reference numeral **165**. The auxiliary cover means is provided primarily to prevent the entry of water or other undesired matter through the hole which it overlies during the transfer operation.

The body means and the rigid framework is then removed from its storage position and the upper attaching means **50** is secured thereto as indicated in FIG. 4, this upper attaching means in turn then being secured to a crane hook such as indicated in FIG. 1 by reference numeral **170**, the hook being suspended from a line **171** which passes over a sheave **172** mounted at the outer end of a crane boom indicated by reference numeral **173**. It will be understood that this lifting arrangement is shown for the purpose of illustration only, and that any suitable means may be employed for this purpose. At this point, it should be understood that the framework of the apparatus will be suspended from the hook **170**, while the body means will in turn be suspended from the rigid framework, the collapsible portion **90** still being retained in its up position by means of the webbing portions **115** and the associated snap hooks.

The apparatus is then moved to a position such that it is in overlying relationship to the hole which has the auxiliary cover means disposed thereover. For example, in FIG. 1, the apparatus may be disposed over any of openings **21**, **22** or **23** which are each illustrated as having an auxiliary cover means associated therewith. The second lid portion of the auxiliary cover is then removed and the crane hook is lowered such that the collapsed body portion is supported on the shoulder of the auxiliary cover means while the upper portions **60** and **70** of the body means are allowed to droop downwardly inside the collapsed portion to the position indicated relative to hole **22** in FIG. 1. In this position, the rigid framework is disposed closely adjacent the attaching means at the top of the associated article, and the lower attaching means **40** of the apparatus is then secured in operative position so as to connect the lower portion of the rigid framework to the attaching means at the upper portion of the article to be transferred.

It will, of course, be understood that in this position, full protection is provided such that there is no possibility of any foreign matter entering through the hole **22**. The crane hook is then lifted upwardly until the access sleeves **85** and **86** are accessible whereupon any suitable adjustments may be made or any lines or other connections which may be desired to pass through the access sleeves may be accommodated through the access sleeves. The sleeves are than tightened by binding them or the like so as to make them water-proof.

The webbing **115** and the snap hooks at the end thereof are then released so as to allow the collapsible body portion **90** to unfold from its compact position. The crane hook is then lifted and as it rises, the collapsible body means will start to expand as illustrated in the body means and article associated with hole **23**. It will be understood that the body means will continue to expand until it finally reaches the position illustrated in overlying relationship to hole **24** wherein the body means is fully extended and the article is disposed therewithin and completely protected by the surrounding body means. Once the lower portion of the body means has been lifted clear of the auxiliary cover means, the second lid portion may be replaced in its operative relationship so as to protect the hole through portion **10**. Any suitable latch means may be employed for retraining the second lid portion in operative position relative to the first lid portion.

If it is subsequently desired to attach some means such as a shock absorber on the lower end of the article being transferred, the collapsible body means may be raised and retained in its up position so as to provide the desired clearance while such means is being secured in position. The collapsible cover portion may then be again released so as to lower into engagement with any means which may have been secured to the article.

It will be understood that when the article to be transferred is subsequently placed into position in a corresponding well or any similar installation, the steps of the above procedure will be reversed, and the steps of unloading the article from the cover apparatus would be in sequence from right to left as seen in FIG. 1, rather than in the sequence of left to right as previously described in removing the article from its stored position.

It will, of course, be understood that in raising and lowering the collapsible portion of the body means as may be necessitated during operation, the lines **107** previously described will be manipulated for accomplishing this result.

While the apparatus has been illustrated as being employed with an article which is normally stored in a vertical position, the apparatus may also be installed over the end of a horizontally disposed article, and the collapsible body portion pulled onto the article as the article is lifted.

It is apparent from the foregoing that there is provided a new and novel protective transfer cover apparatus which is employed for protecting articles from the elements when such articles are being moved from place to place as by a lifting crane or other type of means. The construction of the apparatus is such that it is substantially weather-proof and will provide effective and continuous protection against sun, wind, rain and so forth. The rigid framework of the apparatus permits the apparatus to be readily assembled and disassembled with respect to an article to be transferred, and the arrangement is such that it is particularly adaptable for connection and disconnection from an article which is disposed within a well and wherein it is necessary that the apparatus be of such a construction as to depend through an associated hole over the well as has been amply and fully illustrated in FIG. 1 of the drawings. The body means of the present invention also incorporates a collapsible portion along with means for retaining this collapsible portion in its compact collapsed position such that the apparatus is quite readily stored in a small space, and yet which is expandable to accommodate a relatively large article. The construction of the apparatus of the present invention is quite simple and inexpensive, and yet at the same time is very sturdy and reliable in use.

As this invention may be embodied in several forms without departing from the spirit or essential characteristics thereof, the present embodiment is therefore illustrative and not restrictive, and since the scope of the invention is defined by the appended claims, all changes that fall within the metes and bounds of the claims or that form their functional as well as conjointly cooperative equivalents are therefore intended to be embraced by those claims.

We claim:

1. Protective transfer cover apparatus comprising a hollow body means formed of flexible water-proof material and including a closed end portion and an opposite open end portion, a rigid framework disposed within

said body means at said closed end portion, clamping means for securely attaching said body means to said rigid framework, said framework including a lower attaching means for attaching the framework to an article to be transferred, said rigid framework also including an upper attaching means extending outwardly of said body means for attachment to a suitable transfer mechanism, a portion of said body means adjacent said closed end portion having reinforcing means connected therewith, said body means including a bellows-like collapsible portion intermediate said closed end portion and said opposite open end portion, means for limiting expansion movement of said collapsible portion, means for remotely controlling the collapsing and expanding movement of said collapsible portion, and means for retaining said collapsible portion in its collapsed compact position when desired, and including in combination an auxiliary cover means having a removable lid portion disposed in the central area thereof, said auxiliary cover means also including a portion defining an annular surface for receiving the opposite open end portion of said body means and for maintaining a seal therewith to prevent access of undesired matter into the interior of the auxiliary cover means or the body means.

2. Protective transfer cover apparatus for transferring a large rigid elongated heavy article with respect to a storage means having an access opening and comprising a hollow body means for receiving and protecting therein an article to be transferred, said body means including a closed sealed upper end portion, said body means having an open lower end portion for receiving an article to be transferred and for defining a seal with respect to an access opening of a storage means, first attaching means disposed within said body adjacent the closed end portion for supporting the article to be transferred, second attaching means extending outwardly of said closed end portion for attachment to suitable power operated transfer mechanism, said body means also including a collapsible tubular portion intermediate said upper end portion and said lower end portion, said collapsible tubular

portion being capable of collapsing while said first attaching means is attached to an article to be transferred and while said second attaching means is attached to a transfer mechanism with the body means in non-surrounding relationship to an article to be transferred.

3. Protective transfer cover apparatus comprising a hollow body means for receiving and protecting therein a large rigid elongated heavy article to be transferred, said body means including a closed sealed upper end portion, said body means having an open lower end portion for receiving an article to be transferred, first attaching means disposed within said body adjacent the closed end portion for supporting the article to be transferred, second attaching means extending outwardly of said closed end portion for attachment to suitable power operated transfer mechanism, said body means also including a collapsible tubular portion intermediate said upper end portion and said lower end portion, said collapsible tubular portion being capable of collapsing while said first attaching means is attached to an article to be transferred and while said second attaching means is attached to a transfer mechanism with the body means in non-surrounding relationship to an article to be transferred, storage means for containing articles to be transferred, means defining an access opening to said storage means and being adapted to engage the lower end portion of said body means for maintaining a seal therewith to prevent entrance of undesired matter through said access opening.

References Cited by the Examiner

UNITED STATES PATENTS

346,346	7/86	Banks.	
645,890	3/00	Conrad	135—8
2,372,439	3/45	Lofgren.	
2,575,893	11/51	Seaman	150—52
2,619,225	11/52	Mintz.	
2,817,096	12/57	Roth	92—42

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