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(54) Title: MANUFACTURING METHOD FOR CRAB POT AND ITS FISHING NET

(57) Abstract: The present invention relates to a crab pot and its manufacturing method including a fishing net, and more specifically it is firstly related to mechanical apparatuses for making circular frames (170, 170a, 170b) and connecting rods (240) as vital elements of crab pot, and secondly it is concerned to jig fixtures for bending, assembling and welding the components, and finally it is associated with the binding method and coupling member with the fishing net which is covered on the welding frame of crab pot.
Manufacturing method for crab pot and its fishing net

Technical Field

The present invention relates to a crab pot and its manufacturing method including a fishing net, and more specifically it is firstly related to mechanical apparatuses for making circular frames and connecting rods as vital elements of crab pot, and secondly it is concerned to jig fixtures for bending, assembling and welding the components, and finally it is associated with the binding method and coupling member with the fishing net which is covered on the welding frame of crab pot.

Background Art

A crab pot having a bait container is usually set in the bottom of sea approximately from 100 m to 1,000 m or the submarine canyon through the year for capturing crustacean. Generally the amount of 1,200 to 1,500 crab pots are released separately as unit of about 240 crab pots in general while in the fishing operation.

As mentioned on the above, the large shipping amount of crab pot for the crab fishery is necessary for achieving big haul. But the structure of conical crab pot in prior art has inadequate for stacking the crab pot because they show large dead space along the pile due to the lack in a symmetry shape.

The construction of crab pot having a circular cone shape publicly known in this technical field is made using a simple welding process joining the bottom and the upper circular frame with a plurality of connecting rod. For the netting process in a frame of crab pot in the prior art, usually the fishing net having a relatively large mesh size is enclosed around the complete frame by means of binding a long rope. Such kind of binding method deteriorates the productivity of the crab pot and the accessibility of maintenance for the damaged fishing net.

Furthermore, the binding rope around the frame in the prior art is providing another source for breaking a fishing net and a frame of crab pot due to the accident sticking with obstacles in the sea while
in pulling up or throwing operation.

According to the prior art in a circular frame for a crab pot, the welding portion of circular frame tend to erode or break because the junction is exposed to the outside without any protection, in addition the uncovered portion is vulnerable due to external force or concentrated load while in the fishing operation or transporting process.

In the prior art, generally process for making a crab pot is related by hand making operations. In the prior manufacturing process, it requires a lot of loss in man power and the processing time. And the symmetric construction of crab pot which is necessary for the stable configuration under external force or concentrated load is hard to achieve by any kind of hand making process in the prior art.

Disclosure of the Invention

It is first object of the present invention to provide a manufacturing method of a crab pot by devising suitable jig fixtures and apparatuses for the mass production system so as to achieve the cost reduction and improve the productivity.

It is second object of the present invention to provide a circular frame having an excellent concentricity and a protection cover around the welding portion as a component of the crab pot so that it can endure any concentrated load or external force on it. In other words, the second present embodiment relates to provide a manufacturing method for making a crab pot having the excellent concentricity and symmetry by devising jig fixtures for welding and assembling process and bending device for the circular frame in order to settle the problem.

Due to the water resistance in ocean flow and mass load while in the fishing operation, there has been a serious problem in the breakage of circular frame in the prior art. In order to enhance the taking from the fishery, the structure of crab pot also needs maximizing stack in height for transporting in efficient and the easy accessibility in the fishing net for capturing the crustacean.
Therefore, the third object of the present invention relates to a new frame structure having a stable and optimizing shape for transporting a large amount of crab pots.

According to the prior art, the binding method and the resultant structure between the circular frame and the connecting rods are closely related to a hand making process resulting the dead space between the stacked crab pots while in transporting. The complete frame structure of a crab pot made by a hand making process in the prior art is unstable especially in the stack for transportation because the rounding shape of the connecting rods with the bottom of the circular frame shows the inward rounding configuration which also would be a source for deformation and crack from the concentrated load on the connecting rods of the frame in the underneath part along the stack of crab pot.

Finally, the forth object of present invention is related to a fishing net having a new type of coupling member so that the maintenance of the fishing net could be achieved in site work during the throwing and pulling up operation of crab pot on the ship. A bend type of coupling device for the fishing net of the present invention is sophisticatedly devised in the connection with binding of the fishing net around the frame of crab pot. The coupling method in the prior art is usually related to the process of binding a long rope along the circular frame. But this kind of coupling method has a serious problem in that the whole fishing net is useless when the rope is damaged. Moreover the quick maintenance is difficult even though the damaged part is trivial. And the entire appearance of the fishing net in the prior art is vulnerable due to the loose coupling on the frame of crab pot.

**Brief Description of the Drawings**

The foregoing and other objects, aspects, and advantages will be better understood from the following detailed description of preferred embodiments of the invention with reference to the drawings, in which:

Fig 1 is a perspective view showing the bending device of
present invention for making a circular frame.

Fig 2 is an enlarged view of the primary area demonstrating the operation of Fig. 2.

Fig 3 is a perspective view showing another embodiment of the fabrication device for making a circular frame.

Fig 4 is an analyzed perspective view of Fig 3.

Fig 5 is a cross sectional view showing the various embodiments of the protecting cover which is formed around the welding portion of the circular frame fabricated by the embodiment of Fig 1 and Fig 3.

Fig 6 is a perspective view showing the hooked portion of the connecting rod which is another embodiment of the present invention.

Fig 7 is a cross sectional view showing the hooked state of the connecting rod.

Fig. 8 is a perspective view showing a jig fixture for assembling and welding frames of crab pot.

Fig 9 is a front view of Fig 8, which demonstrates the coupling state of frames.

Fig 10 is a cross sectional view of jig fixture of Fig.8 having a resilient member for combining a connecting rod.

Fig 11 is a perspective view of accomplished crab pot under the embodiments of present invention

Fig 12 is a front of view of Fig 11 having a fishing net around the frame of crab pot.

Fig 13 is a front of view showing an aspect of stacked crab pot based on the prior art.

Fig 14 is a front of view showing an aspect of stacked crab pot based on the present invention.

Fig 15 is a perspective view showing the coupling state of fishing net using the coupling member.

Fig 16 is a cross sectional view showing an aspect of fishing net which is formed inner part of the frame around the crab pot.

Fig 17 is a cross sectional view showing an aspect of fishing net which is formed outer part of the frame and another aspect of fishing net between the middle circular frame and the bottom circular
frame.

Fig 18 is a perspective view showing the coupling member for binding the fishing net.

Fig 19 is a cross sectional view showing the coupling state of Fig 18.

**Best Mode for Carrying Out the Invention**

Hereinafter, preferred embodiments of crab pot according to the present invention will be described in detail with reference to the accompanying drawings.

In order to make a complete frame of crab pot conforming to the embodiments of present invention, first of all the manufacturing apparatus and jig fixture are necessary for fabricating a circular frame having protection function on the junction. In addition, the fabrication of a circular frame with high concentricity become very important factor for completing a frame of crab pot since the circular shape is necessary for the efficient stack, the endurance of crab pot and constructing the stable fishing net.

Fig 1 is a perspective view showing the bending device of the present invention for making a circular frame and Fig. 2 is an enlarged view of the primary portion demonstrating the operation of Fig. 2. The detail process for making a circular frame will be given herein below.

A fabrication device for a circular frame is comprised of a rotating circular disc 130 having a great rotational inertia moment which is axially connected with the motor 120 set on the bottom part below the table 110. And an inserting portion 131 is provided the above mentioned disc 130. The plurality of guide pin 140 on the table 110 are located around the rotating circular disc 130. A guide roller 150 located on the same circumference of guide pin 140 is set, and a pressing roller 161 operated by the hydraulic cylinder 160 is installed between the guide roller 120 and the guide pin 140. In front of guide roller 150, another guide roller 151 for introducing the round bar is formed and the guide pin 141 is also installed for protecting the round bar from escaping to the upper direction during the circular
motion with the rotating circular disc 130.

The detail fabrication process according to the fabrication device for a circular frame 100 will be described as followings. The one end of a round bar having a suitable length in connection with the circumference of rotating disc 130 is inserted into the inserting portion 131. At that time the round bar is tightly pressed along the circumference by the pressing roller 161. After constricting the round bar around the circular disc 130 by means of the pressing roller 161 and the inserting portion 131, the rotational torque of 360 degree is exerted on the circular disc 130 so that a circular frame having an excellent concentricity is formed with the rotational motion of disc.

As seen on the Fig. 2, the released hydraulic force on the pressing roller 161 after completing a circular frame 100 causes the drop of the circular frame onto the surface of the table 110.

Fig. 3 is a perspective view showing another embodiment of the fabrication device for making a circular frame and Fig. 4 is a analyzing perspective view of Fig. 3. Basically the elements for consisting the fabrication device are same for the construction elements of Fig. 1. The difference is related to the construction of rotating circular disc because the frame of crab pot having conical shape needs two different circular frames at least.

Along the circumference of the rotating circular disc 132, additional ring disc members 134, 133 are combined in a manner of assembling means using the connecting bar 135 and the coupling element 136. Depending on the desired size of a circular frame, one can adjust the diameter of rotating disc on the table 110 by separating the first ring disc element 134 or second ring disc element 133 in order.

The inserting portions not specifically mentioned on Fig. 3 or Fig 4 analogous in the inserting portion 131 on Fig. 1 can be formed on the circumference of ring disc members 134, 133 so as to provide a same function for making a circular frame. In addition, the elongated hole 111 along the center of the disc is formed for adjusting the guide pin 140 on the table 110 in accordance with the size of rotating circular disc 132, 133, 134. For the adjusting the
crooked guide pin 141 under the size change of the rotating disc, the
guide hole 112 of the guide pin 140 is formed along the same
direction of guide roller 150, 151 which also needs the position
change on the table 110.

As above mentioned construction, a circular frame having an
excellent concentricity in different diameter is formed by the simple
manipulation.

A welding process is necessary for connecting the both ends
of the circular frame 170 which is made by the above mentioned
process. Under the present invention, a protecting cover is devised for
guarding the welding portion. More details will be explained herein
below.

Fig 5 is a cross sectional view showing the various
embodiments of the protection cover which is formed around the
welding portion of the circular frame fabricated by the embodiment of
Fig.1 and Fig 3.

Before the welding on both ends 171,172 of the circular frame
170, the protection cover 180 should be inserted under the
embodiment of the present invention. The connection of the both ends
simply can be achieved using a conventional welding process. And
then the protection cover 180 as a securing means is located
covering the welding area 173. In order to protect the welding
portion 173, various methods are suggested for fixing the protection
cover 180 onto the circular frame 170.

As seen on the Fig. 5, rivetting, pressing and welding
process as a securing means meet for fixing the protection cover 180
under the present embodiment. For the rivetting process, the
penetrated holes 181 of the both sides through the circular frame 170
are necessary for combining the protection cover 180. As regards the
pressing process under the present embodiment, a hooked insert 183
inserted through the penetrated holes 181 is joined for oppressing the
protection cover 180 by means of press operation. Also additional
welding process as a securing means can be applied both edges of
the protection cover 180.

According to the embodiment and practical application of
protection cover 180 as a securing means, the erosion, stress or concentrated load on the welding portion are greatly reduced so that the breakage of the circular frame is minimized. In addition, the circular shape of frame having the protection cover 180 is sustained providing a stable structure for enduring external force or internal load.

Fig 6 is a perspective view showing the hooked portion of the connecting rod which is another embodiment of the present invention and Fig 7 is a cross sectional view showing the hooked state of the connecting rod.

The bending jig fixture 200 for hooking the connecting rod 240 at the end portion under the present invention is comprised of two bottom bars 220, 221 having cylinder shape and a pressing member 230 having rounded end for the press operation. For the symmetric hooking of the end portion of the connecting rod 240, the desired size of hole 251 on the working table 250 is formed.

The hooking 241, 242 of the connecting rod 240 are configured as a symmetric shape for the stability in the conical frame of crab pot under present invention.

Secondly, the present invention provides a jig fixture 300 for assembling and welding a conical frame of crab pot with the connecting rod and the circular frame as components.

The assembling method and combining structure between the plurality of the connecting rod 240 and the circular frame 170 become important factors in determining the symmetrical appearance of the conical frame of crab pot. In order to have stable structure, the splitted connecting rod 240 joining with circular frame 170, 170a, 170b are distributed as a same inter angle for the symmetrical configuration.

Fig. 8 is a perspective view showing a jig fixture for assembling and welding frames of crab pot and Fig 9 is a front view of Fig 8, which demonstrates the coupling state of frames. Based on these figures, the structure of the jig fixture will be discussed as followings.

A jig fixture 300 for making the conical frame of crab pot 1 is comprised of three different diameters of circular rotating discs 320.
330, 340 installed along the rotatable vertical axis 310 which provide the setting sites corresponding to the circular frames 170, 170a, 170b. And in order to set the connecting rod 240 on the jig fixture 300, a plurality of elongated holes 332, 342 322 are shaped along the circumference of the circular rotating discs 330, 340 320. And a plurality of fixing bars 331, 341 having prominent shape are formed on the second and third rotating discs 330, 340 so as to set the circular frames 170a, 170b on the jig fixture 300. In addition, a plurality of the resilient supporting member 350 having a suitable inclination with respect to the rotating disc 330 provide a supporting means for the connecting rod 240. The supporting member 350 on the second circular disc 330 approximately has 40 degree of gradient with respect to the plane.

For the detail construction of the supporting member 350 as seen on Fig. 10, outer supporting member 352 and inner supporting member 351 are telescopically combined each other and an inner spring as a resilient means 353 is provided. The concave groove 354 is shaped at the end portion of the second supporting member 352 such that the connecting rod 240 can be combined thereof.

The detail manufacturing method for making a conical frame of crab pot 1 using the jig fixture 300 will be described in accordance with the process herein below

1) An upper circular frame 170b is inserted into the fixing member 341 on the third circular rotating disc 340.

2) And then, a middle circular frame 170a is combined into the fixing member 331 on the second circular rotating disc 330.

3) The connecting rod 240 having the symmetric hooking portion 241, 242 is connected to the upper circular frame 170b so that the hooked portion of connecting rod is inwardly set while in coupling with the circular frame using the elongated hole 342 and the linear part of connecting rod is supported by the resilient member 350.

4) A bottom circular frame 170 is dropped from the upper part of the jig fixture so that the outwardly hooked portion 242 of connecting rod 240 can combine with the bottom circular frame 170.
5) Using a separated device for oppressing the connecting rod 240 to circular frame 170b, 170 (not shown on the drawing), they can be tightly combined.

6) And then, the contact portions of circular frame 170, 170a, 170b with the connecting rod 240 are welded in order.

Using the jig fixture 300 for assembling and welding for making a conical frame of crab pot, more stable and symmetrical shape of the frame of crab pot can be fabricated in a systematical manufacturing method.

Fig 11 is a perspective view of accomplished crab pot under the embodiments of present invention and Fig 12 is a front of view of Fig 11 having a fishing net around the frame of crab pot.

As seen on the Fig 12, the conical frame of crab pot 1 enclosed the fishing net 400 under the present invention provide easy access for the crustacean because the outwardly rounded shape of bottom portion. This kind of fishing net is more stable in the ocean flow and minimize the disturbance with obstacles in the ocean due to the smoothly curved formation 22.

The high concentricity of circular frame 170, 170a, 170b in the conical frame of crab pot 1 also provide the high endurance while in pulling up and throwing operation in the ocean because the symmetric property of the conical shape distribute the load or external force from water resistance or concentrated load. Furthermore its symmetrical structure is very important for stack in pile of the crab pot in order to enhance the taking from unit fishery.

Comparing with the structure having the inward hooked portion 15 of the connecting rod 14 as seen on the Fig. 13 in prior art, the dead space along the pile disappear as seen on the Fig. 14, and tight stack in the pile is achieved resulting large transporting amount of crab pot per unit area.

Eliminating the dead space in the stack pile under the present invention, the loading capacity is increased by 186% comparing with the prior art. The increased load capacity provides a cost reduction by minimizing transporting cost and large taking per unit fishery.

Thirdly, in order to provide easy and quick maintenance of
fishing net using the present embodiment of coupling device for the fishing net, the attachable coupling member having a bend type is provided.

One can use the coupling member for making a double fold or multi-fold fishing net around the crab pot depending on the taking, the fishery and the kind of crustacean. The coupling member under the present invention can effectively maintains and binds the fishing net tightly around the frame of crab pot. More details will be explained as followings.

Fig 15 is a perspective view showing the coupling state of fishing net using the fixing member. As seen on the drawing, the fishing net 400 is inclosed around the conical frame of 170, 170a, 170b and connecting rod 240 binding with the coupling member.

Fig 16 is a cross sectional view showing the aspect of fishing net which is formed inner part of the frame around the crab pot. The fishing net 400 is located on inner part of the connecting rod 240 and circular frame 170, 170a, 170b and the binding of fishing net 400 and circular frame 170, 170a, 170b is coupled by the coupling member 500 so that the fishing net 400 is more safely protected thereof.

Fig 17 is a cross sectional view showing the aspect of fishing net which is formed outer part of the frame and another aspect of fishing net between the central circular frame and the below circular frame. The fishing net 400 is located on outer part of the connecting rod 240 and circular frame 170, 170a, 170b, and an additional fishing net 410 is located between middle circular frame and bottom circular frame, and the binding of fishing net 400 and circular frame 170, 170a, 170b is coupled by the coupling member 500 so that the double fishing net 400, 410 is more safely protected thereof.

The below mentioned coupling member is necessary for the coupling of fishing net under present embodiment.

Fig 18 is a perspective view showing the coupling member for binding the fishing net and Fig 19 is a cross sectional view showing the coupling state of Fig 18.

The coupling member 500 according to the present invention consists of a rope 510 and a set of plastic insert which is comprised
the fixing device 520, 530. The rocking groove 521 on the fixing device 520 and the rocking prominence 531 on the fixing device 530 incorporate in a coupling member 500 having a connection of rope 510. With the use of this kind of coupling member 500. Accordingly, the coupling of the fishing net under the present invention shows the shape of circular teeth.

**Industrial Applicability**

The present invention is concerned a mass production system for making a crab pot having an optimized structure, which affords a high stack ability in the pile of crab pot by eliminating the dead space along the stacked crab pots, which provides a stable structure having symmetrical shape resulting a cost reduction for transporting the crab pot and a increase of taking per unit crab fishery.

Using the present embodiment of coupling member for the fishing net, one can apply the device for making a double fold or multi-fold fishing net around the crab pot depending on the taking, the fishery and the kind of crustacean. The coupling member under the present invention can effectively maintain and bind the fishing net tightly around the frame of crab pot.

While the invention has been described in terms of a few preferred embodiments, those skilled in the art will recognize that the invention can be practiced with modification within the spirit and scope of the appended claims.
Claims:

1. A manufacturing method for a conical shape of crab pot having a plurality of connecting rod 40 and a plurality of circular frame comprising:

   a process for making said circular frame 170, 170a, 170b having a high concentricity using said fabrication device of circular frame 100,

   a process for inserting said protection cover 180 having a pipe shape before the conventional welding of said circular frame 170, 170a, 170b, and fixing said protection cover 180 around said welding portion 173,

   a process for bending said connecting rod 240 by forming a symmetric shape of said hooked portion 241, 242 at the ends using said bending jig fixture 200,

   a process for welding said connecting rod 240 and said circular frame 170, 170a, 170b using said assembling and welding jig fixture 300 which is comprised three different diameters of said circular rotating disc 320, 330, 340 installed along said rotatable vertical axis 310 which provides a setting sites corresponding to said circular frame 170, 170a, 170b , and a plurality of said elongated holes 332, 342 322 are shaped along the circumference of said circular rotating discs 330, 340 320., and a plurality of said fixing bars 331, 341 having prominence are formed on said second and said third rotating discs 330, 340 so as to set said circular frames 170a, 170b, and a plurality of said resilient supporting member 350 having a suitable inclination with respect to said rotating disc 330 provide a supporting means for said connecting rod 240,

   a process for coupling said fishing net 400 using said coupling member 500,

   and the manufacturing method is characterized in that said conical shape of crab pot is fabricated using said fabrication device of circular frame 100, said bending jig fixture 200, said assembling and welding jig fixture 300, said fishing net 400, and said coupling member 500.
2. The fabrication device of circular frame 100 as defined in claim 1 further comprising: said rotating circular disc 130 having a great rotational inertia moment which is axially connected with said motor 120 set on the bottom part below said table 110, and said inserting portion 131 is provided on said rotating circular disc 130 and a plurality of said guide pin 140 on said table 110 are located around said rotating circular disc 130, and said guide roller 150 located on the same circumference of said guide pin 140 is set, and said pressing roller 161 operated by said hydraulic cylinder 160 is installed between said guide roller 120 and said guide pin 140, and in front of said guide roller 150, said second guide roller 151 for introducing said round bar is formed and said guide pin 141 is also installed for protecting said round bar from escaping to the upper direction during the circular motion with said rotating circular disc 130.

3. The bending jig fixture 200 as defined in claim 1 further comprising:
   a pair of said bottom bar 220, 221 having a cylinder shape and said pressing member 230 having rounded end are formed for bending said connecting rod 240 resulting said symmetric hooked end portion 241, 242 of said connecting rod 240, and the suitable size of said hole 251 along said working table 250 is formed so that said hooked end portion 241, 242 is inserted providing a reference for the symmetrical bending of another end of said connecting rod 240.

4. The fishing net 400 as defined in claim 1 further comprising: said fishing net 400 located on outer part of the connecting rod 240 and circular frame 170, 170a, 170b, and an additional fishing net 410 located between said middle circular frame and said bottom circular frame, and said fishing net 400 and said circular frame 170, 170a, 170b are bound by said coupling member 500 so that said double fishing net 400, 410 is achieved for the safe protection thereof.

5. The coupling member 500 as defined in claim 1 further
comprising:
said rope 510 and a set of plastic insert which is comprised said rocking groove 521 on said first fixing device 520 and said rocking prominence 531 on said second fixing device 530 are incorporated resulting said coupling member 500 having a connecting means as said rope 510.
INTERNATIONAL SEARCH REPORT

CLASSIFICATION OF SUBJECT MATTER

IPC7: A01K 69/08

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)

IPC7: A01K 69/00, B21F 27/00

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

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

EPDOC, WPI

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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<td>WO 94/18825 A (GULESTO) 1 September 1994 (01.09.94) fig. 1, 6</td>
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<td>A</td>
<td>US 3300890 A (THOMASSEN) 31 January 1967 (31.01.67) fig. 4.</td>
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<tr>
<td>A</td>
<td>GB 2041214 A (WALKFIELD PRODUCTS LTD.) 10 September 1980 (10.09.80)</td>
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<tr>
<td>A</td>
<td>FR 2257224 A (KERRIEN) 8 August 1975 (08.08.75)</td>
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Date of the actual completion of the international search


Date of mailing of the international search report

9 October 2000 (09.10.2000)

Name and mailing address of the ISA/AT

Austrian Patent Office
Kohlmarkt 8-10; A-1014 Vienna

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<td>FR A1 2257224</td>
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