Sept. 4, 1962 F. J. LUKETA 3,052,354

SHRIMP SEGREGATOR

Filed April 7, 1960 4 Sheets-Sheet 1

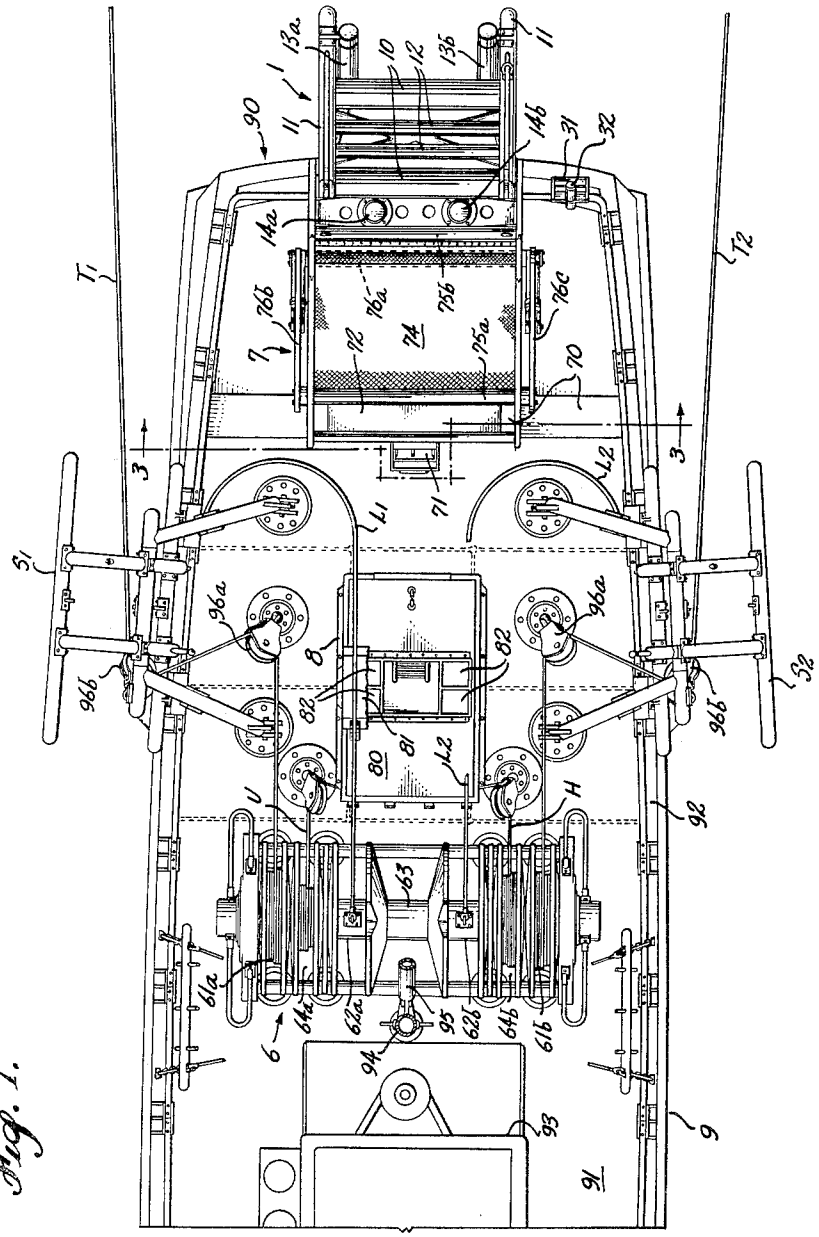


Fig. 1.

INVENTOR.
FRANK J. LUKETA

BY
Reynolds, Beach & Christensen
ATTORNEYS

Sept. 4, 1962 F. J. LUKETA 3,052,354

SHRIMP SEGREGATOR

Filed April 7, 1960 4 Sheets-Sheet 2

Fig. 2.

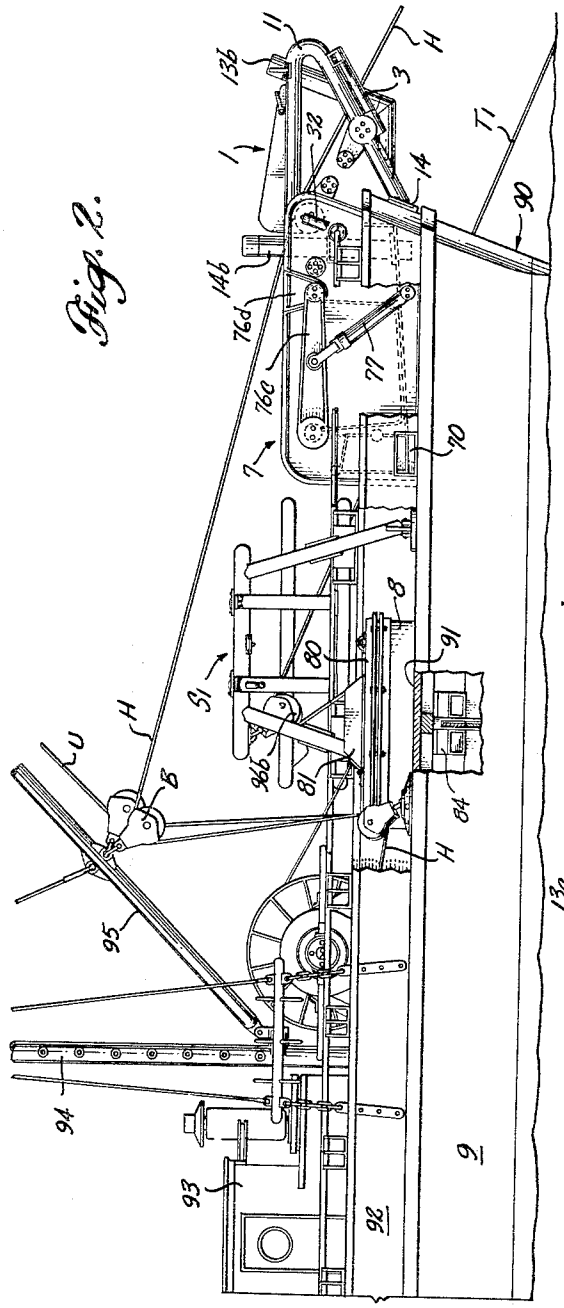
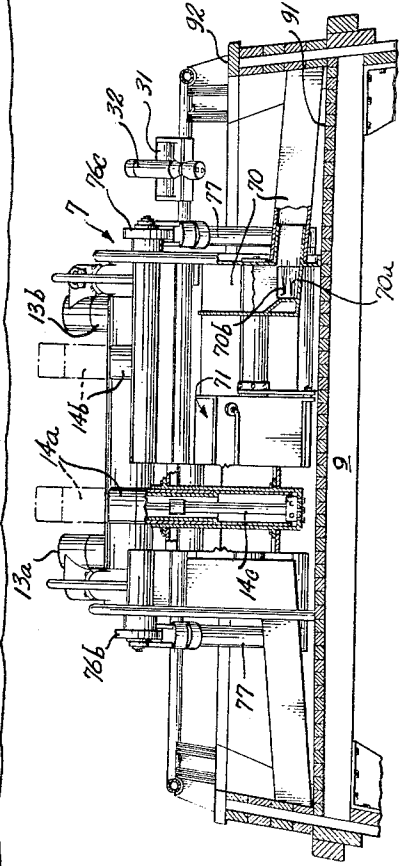


Fig. 3.



INVENTOR.
FRANK J. LUKETA

BY

Reynolds, Beach & Christensen

ATTORNEYS

Sept. 4, 1962 F. J. LUKETA 3,052,354

SHRIMP SEGREGATOR

Filed April 7, 1960 4 Sheets-Sheet 3

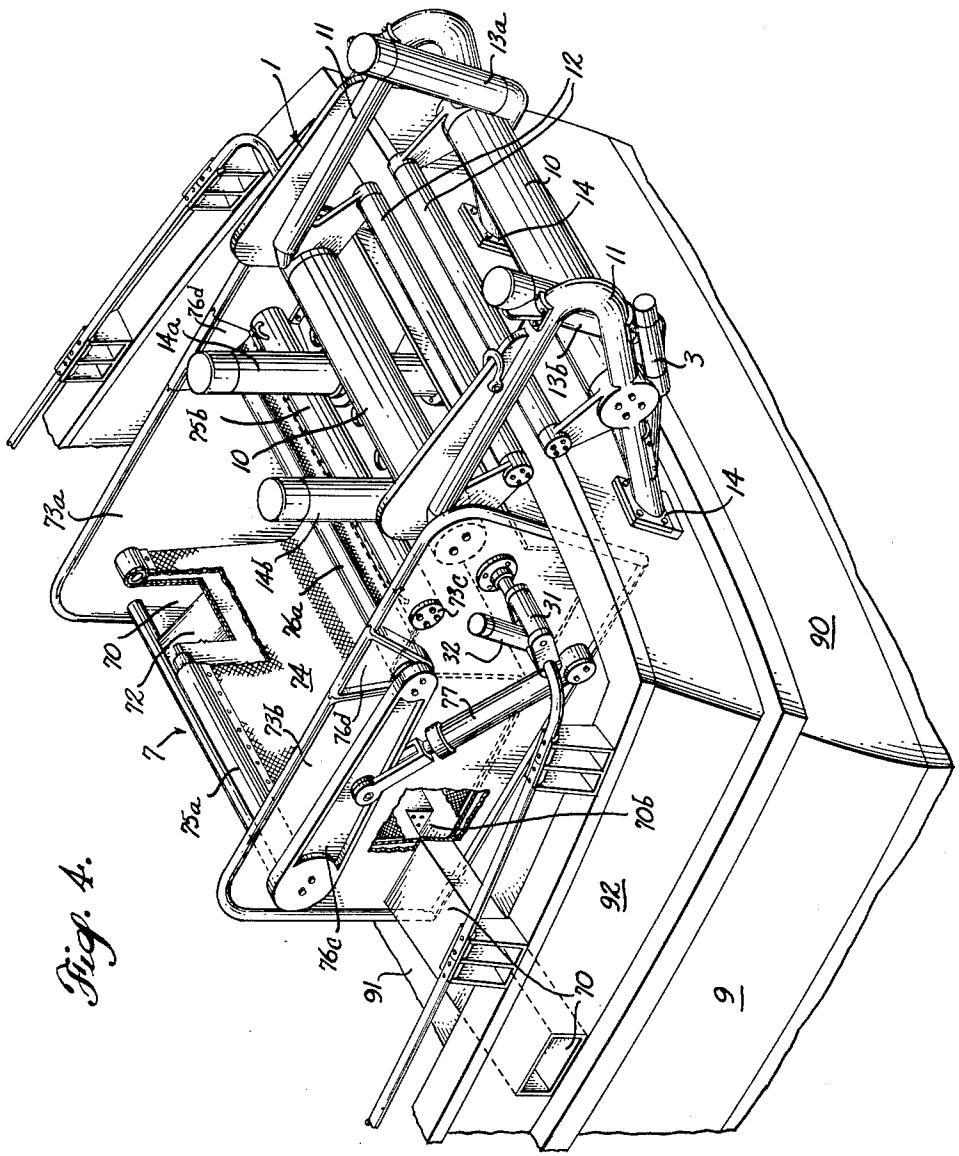


Fig. 4.

INVENTOR.
FRANK J. LUKETA

BY
Reynolds, Beach & Christensen
ATTORNEYS

Sept. 4, 1962 F. J. LUKETA 3,052,354

SHRIMP SEGREGATOR

Filed April 7, 1960 4 Sheets-Sheet 4

Fig. 5.

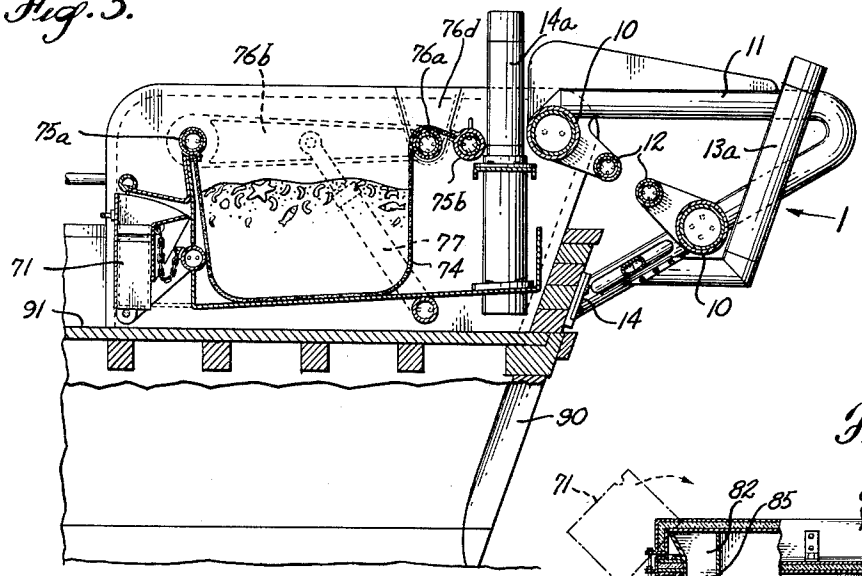


Fig. 7.

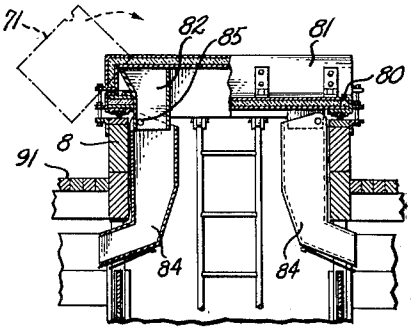
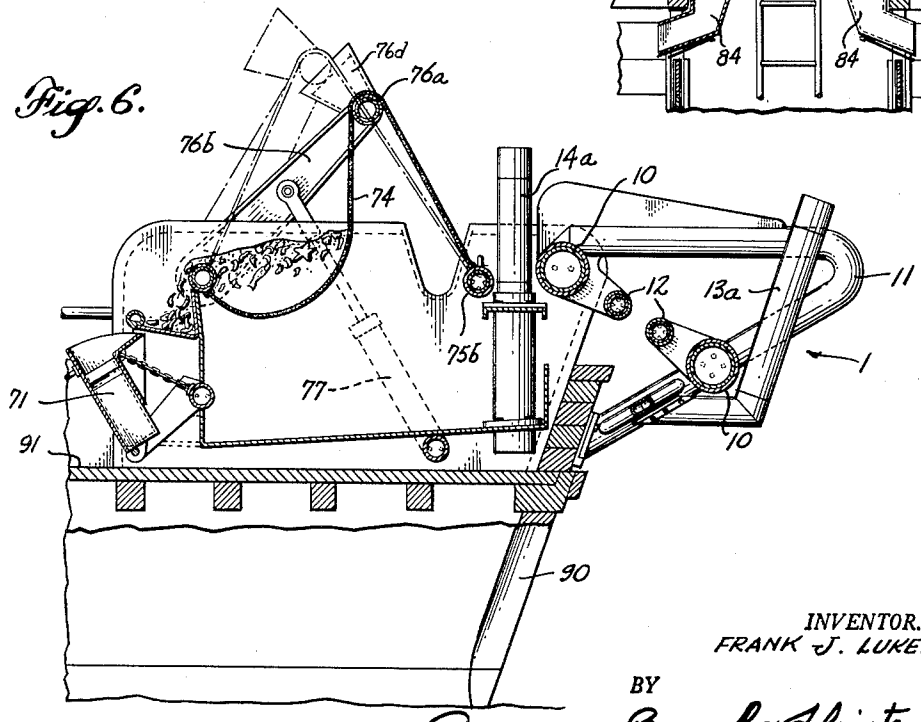


Fig. 6.



INVENTOR.
FRANK J. LUKETA

BY

Reynolds, Beach & Christensen

ATTORNEYS

United States Patent Office

3,052,354

Patented Sept. 4, 1962

3,052,354

SHRIMP SEGREGATOR

Frank J. Luketa, 5567 Greenwood, Seattle, Wash.

Filed Apr. 7, 1960, Ser. No. 20,581
12 Claims. (Cl. 209—123)

Shrimp trawlers find many things in their nets besides shrimp, for example, coral, various forms of marine life, mud, rocks and the like, generally termed debris or "junk." It is necessary to segregate the shrimp from the debris, and to throw or wash the latter overboard. The shrimp should be decapitated as soon as possible, and the heads constitute a further form of debris. The bodies only are kept, and must be refrigerated until the vessel can complete its fishing and reach a market.

All these things must be done quickly, often in the dark—for shrimp are generally caught at night—and with a small crew of perhaps three men, on a small vessel in waters frequently quite rough. The present invention provides a segregating means for use under such conditions, which will simplify and speed up the segregating operations. Thereby the labor required is lessened, the job is better performed, the catch is sooner refrigerated, and its freshness preserved.

The segregating means which is the subject of this invention is shown installed upon a shrimp trawler in a presently preferred form, the trawler also having installed a ramp structure and cooperating multiple drum winch means which are used in hauling and resetting the net, as more fully explained in a companion application Serial No. 20,582, filed April 7, 1960, wherein is claimed the setting-out method and apparatus, including the ramp structure. Certain views of the drawings in this application are duplicates of views in such companion application.

FIGURE 1 is a general plan view of the after portion of such a vessel, illustrating the relationship of the segregating means of this invention to other installations. The figure shows parts in the condition obtaining during trawling.

FIGURE 2 is a side elevational view of the same portion of the vessel, under the same condition, a part being broken away.

FIGURE 3 is a transverse vertical sectional view, substantially at the line 3—3 of FIGURE 1.

FIGURE 4 is an isometric view of the stern portion of the vessel, with parts broken away, and illustrating a portion of the segregating means in a catch-receiving disposition.

FIGURE 5 is a longitudinal sectional view on a vertical plane, through the segregating means and the ramp structure nearby, showing a catch ready for segregation, and FIGURE 6 is a similar view, showing the catch in the course of segregation.

FIGURE 7 is an athwartwise sectional view at the hatch, showing the chutes for final disposition of the shrimp bodies into their hold spaces.

The trawler hull is designated in general by the numeral 9, and has a stern 90, deck 91, and bulwarks 92. A deck house 93 is usually placed somewhat forward of amidship, and a mast 94 and boom 95 rise just aft of the deck house. Stanchions S1, S2 secure the doors when the net is being hauled in. A hatch 8 and main hatch cover 80 afford access to the hold space where refrigerated shrimp are stowed pending their marketing, while a smaller auxiliary hatch cover 81 affords access to chutes 82 leading, as will be explained more fully hereinafter, to the stowage space. A ramp structure generally designated by the numeral 1 extends outboard aft of the stern, during trawling, and guides the net during hauling

in and hauling out by the drums of the winch means 6, installed on deck just aft of the mast and boom.

The ramp structure includes transverse rollers 10 and 12 extending between side guides 11 to constitute a platform over which the net is dragged by haul-in lines L1, L2 or haul-out line H, the ramp structure being releasably supported at 14 in its position of use, but being swingable about the axis of its inboard roller 10 to an inboard stowed position. Line guide means 3, 31, 32 are used as explained in the companion application for guidance of the haul-out line and net, while paired upstanding line guides 13*a*, 14*a* and 13*b*, 14*b* guide the haul-in lines L1, L2, with the respective sweep lines and curtains connected, during hauling in. Jack means 14*c* (FIGURE 3) allow the inside guides 14*a*, 14*b* to be raised and lowered.

The winch means 6 includes a number of independently operable, coaxially disposed drums oriented athwartwise. The drums 61*a*, 61*b* carry the trawl warps T1, T2 whereby the net is dragged during trawling, such warps running through guide blocks 96*a*, 96*b* and over opposite sides of the vessel, near stanchions S1, S2 where water reaction doors are secured when the net is hauled in. Drums 62*a*, 62*b* wind on the hauling lines L1, L2 which are connected to the net in lieu of the trawl warps in the latter phase of hauling in, and central drum 63 reels in the net itself. Drums 64*a* and 64*b* carry lines for various purposes, the combination haul back and try net line H being wound on drum 64*b* and the utility lifting line U on drum 64*a*.

The segregating means with which this invention is concerned is represented generally by the numeral 7. It includes a bin of a capacity to receive the entire catch at any one time, defined by the side walls 73*a*, 73*b* and by the flexible bottom 74. The latter is fixed along its forward edge at 75*a*, just behind and somewhat above the rearwardly sloped segregating table 72 but below the upper edge of side walls 73*a*, 73*b*, and its after edge is secured at 75*b* to a similar bar extending between the side walls, and also at a level below the upper edges of the side walls. An elevating bar 76*a* is carried between the swinging ends of levers 76*b*, 76*c*, for elevation progressively from the lowered position of FIGURES 4 and 5, wherein it too is below the upper edges of the side walls, to the dot-dash line position of FIGURE 6, by means such as the jacks 77. The side walls are notched to permit outward extension of the ends of the elevating bar 76*a*, and when that bar is in its lowered position (FIGURES 4 and 5) the notches are filled by plates 76*d*.

The net is hauled in in a manner described in my now abandoned copending application Serial No. 570,771, filed March 12, 1956 until the codend can be emptied into the segregating means 7, onto the flexible bottom 74, then in its lowermost position as shown in FIGURE 5. The net can then be reset, as in my companion application. Now the elevating bar 76*a* is raised from time to time, until the top portions of the catch will spill or can be raked onto the segrgating table 72,just ahead of the bar 75*a*. Debris is thrown or pushed into chutes 70 at the sides of table 72, and assisted by water jets 70*a* goes overboard. Decapitating is a hand operation, the heads going down chutes 70 and the shrimp bodies are collected in a container 71, and as this is filled it is dumped into chutes 82 and delivered into appropriate hold spaces; see FIGURE 7. From time to time the elevating bar 76*a* is elevated farther, or shortened, and more of the catch spills onto the segragating table 72, until the entire catch is disposed of.

Since the ramp structure 1 is intended to be swung inboard about the axis of its forward roller 10, for stowage, and the bar 75*b* would block its forward and down-

ward swing, this bar **75***b* is removably or releasably mounted, for example by a spigot or inwardly projecting support removably supported at **73***c* in the side walls **73***a*, **73***b*. By removing the supports **73***c* the bar **75***b* can be brought forward with the flexible bottom **74** and stowed on the segregating table **72**. Then the ramp may be swung and deposited in the segregation bin (the transverse bar **76***a* first being raised to permit this then being lowered).

The hatch **8** is freely accessible upon raising the hinged main hatch cover **80**, and the auxiliary hatch cover **81** affords access to the chutes **82**, which are mounted upon and swung with the main hatch cover **80**. Vertical chute sections **84** are hinged at **85** to the chutes **82** and direct shrimp bodies into stowage spaces at opposite sides.

The catch, when it is brought up from the ocean floor and deposited in the segregation bin, is usually somewhat muddy. Therefore the flexible bottom **74** is perforated to permit the drainage downward and out through opening **70***b* into chute **70** thence overboard, of the water used for the required rinsing of the catch.

I claim as my invention:

1. A shrimp segregator of the character described, comprising spaced-apart side walls, a flexible bottom fixedly supported at its edges which extend transversely between and are located well above the lower edge of the side walls, but at spaced locations, and of a length to depend between the side walls and intermediate its fixedly supported edges, for the support of the catch, a segregating table supported adjacent but beneath one such fixedly supported edge, and means including a bar underlying the flexible bottom intermediate its fixedly supported edges and means to elevate said bar thereby to elevate the flexible bottom, to spill the catch onto said segregating table.

2. A shrimp segregator as in claim 1, wherein the bar underlying the flexible bottom is located near the edge of the flexible bottom which is distant from the segregating table, and means controlling upward movement of said bar, and with it the flexible bottom, to effect its approach to the segregating table.

3. A shrimp segregator as in claim 2, including opposite lever arms pivotally mounted in the opposite side walls, adjacent the segregating table, and supporting the bar which underlies the flexible bottom, and the elevating means being arranged to swing said lever arms upwardly or downwardly, said lever arms and their swinging means constituting the means to elevate the bar and the flexible bottom.

4. A structure for use upon a shrimp boat for collecting and segregating the catch, said structure comprising a ramp assembly pivotally mounted upon a transverse axis adjacent the stern of the boat to swing outboard beyond the stern into a position of use and inboard to a stowed position, a catch-receiving bin upon the boat disposed immediately ahead of said ramp assembly and including side walls spaced apart in excess of the width of said ramp assembly, an after bar extending transversely between said side walls, within the position occupied by the ramp assembly when stowed, and constituting the upper after edge of the bin, and means releasably connecting said bar and the side walls, for removal of the bar preparatory to stowing the ramp assembly.

5. A structure for use upon a shrimp boat, structure as defined in claim 4, the bin further including a flexible bottom extending between the side walls and anchored at its one end to the after bar, and at its forward end between the bin's side walls, a second bar disposed transversely beneath said flexible bottom, between its forward anchorage and said after bar, arms outside the side walls, pivotally supported at their forward ends and extending aft, engaging and supporting said second bar, the side walls being notched at their upper edges for reception of said second bar, and means to swing said arms upwardly to elevate the second bar above the side walls, and to raise the flexible bottom.

6. A structure for use upon a shrimp boat, structure as defined in claim 5, including notch-closing plates carried by the second bar, arranged to close the notches when the second bar is in its lowermost position.

7. In combination with a shrimp trawling vessel having a stern located net guiding ramp, a shrimp segregator located forwardly of said ramp to receive the catch from a net hauled in over said ramp, said segregator including a bin located just forwardly of said ramp and a segregating table located just forwardly of said bin on which a part of the catch received in the bin is selectively spilled for manual segregation, the said bin including spaced-apart side walls and a flexible, foraminous bottom having a fixed edge adjacent said segregating table and a movable edge relatively adjacent said ramp, such segregator further comprising means to elevate said bottom, at the edge adjacent said ramp, above the level of the fixed edge thereof to effect progressive transfer of catch deposited in said bin onto said table.

8. The combination of claim 7, further comprising debris discharge chute means leading from said segregating table to points of discharge outboard said vessel.

9. The combination of claim 8, including drainage means for the bin communicating with said debris discharge chute means, whereby rinsing water drained off from and through the said foraminous flexible bin bottom is drawn off through such drainage means and said debris discharge chute means.

10. The combination of claim 8, wherein water jet delivering means are located in said debris discharge chute means to assist outboard discharge of debris therethrough.

11. In combination with a shrimp trawling vessel having a stern located net guiding ramp, a shrimp segregator located forwardly of said ramp to receive the catch from a net hauled in over said ramp, said segregator including a bin located just forwardly of said ramp and a segregating table located just forwardly of said bin on which a part of the catch received in the bin is selectively spilled for manual segregation, the said bin including fixed, spaced-apart side walls and a flexible, foraminous bottom having a fixed edge adjacent said segregating table and a movable edge relatively adjacent said ramp, such segregator further comprising means pivotally movable about an axis substantially coincident with said fixed edge to elevate the movable edge of said bottom above the level of the said fixed edge to effect progressive transfer of catch deposited in said bin onto said table.

12. In combination with a shrimp trawling vessel having a stern located net guiding ramp, a shrimp segregator located forwardly of said ramp to receive the catch from a net hauled in over said ramp, said segregator including a bin located just forwardly of said ramp and a segregating table located just forwardly of said bin on which a part of the catch received in the bin is selectively spilled for manual segregation, the said bin including fixed, spaced-apart side walls and a flexible, foraminous bottom having a fixed edge adjacent said segregating table and an opposite edge relatively adjacent said ramp, and intermediate such edges depending within the bin, such segregator further comprising means engageable beneath the bottom adjacent such opposite edge, and pivotally movable about an axis substantially coincident with said fixed edge, to elevate said bottom above the level of the said fixed edge to effect progressive transfer of catch deposited in said bin onto said table.

References Cited in the file of this patent

UNITED STATES PATENTS

1,089,034	Baker	Mar. 3, 1914
2,234,208	Thompson et al.	Mar. 11, 1941
2,718,300	Goldberg et al.	Sept. 20, 1955
2,876,917	King	Mar. 10, 1959