May 28, 1935. T. C. FORBES ET AL 2,002,572

MINNOW PAIL

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Fig. 1

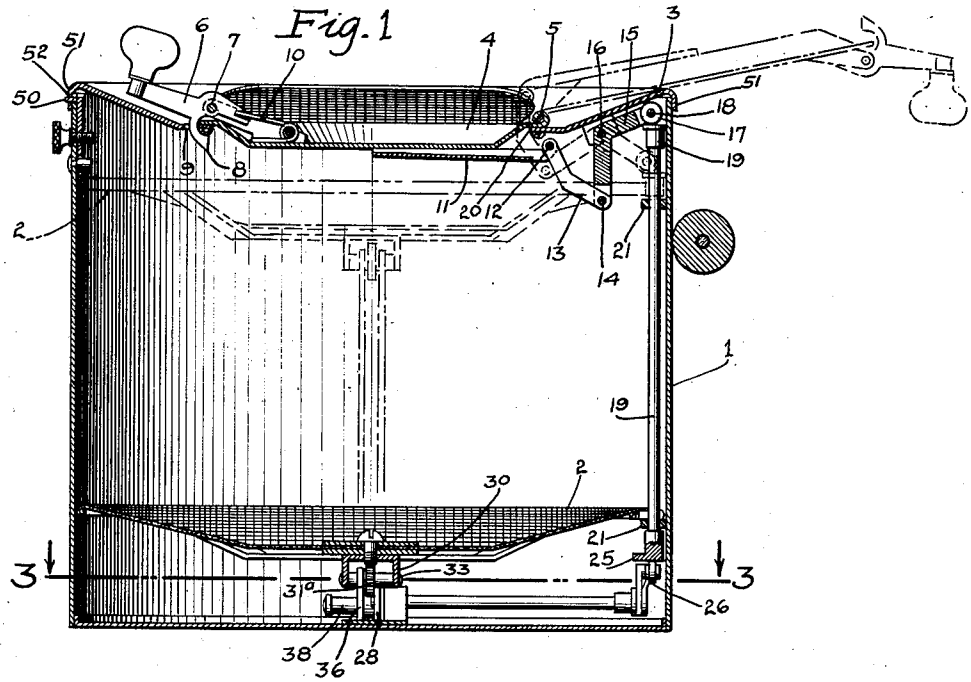
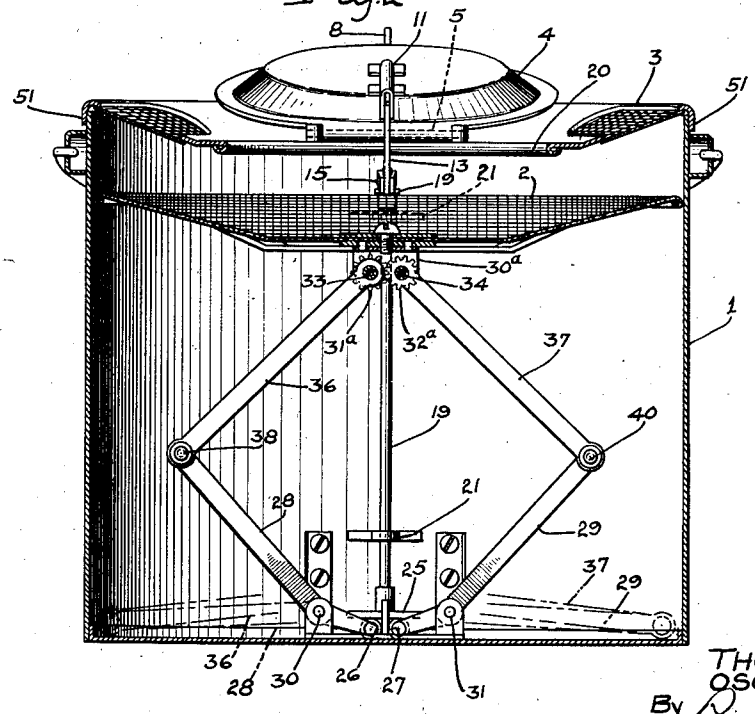


Fig. 2



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Fig. 3

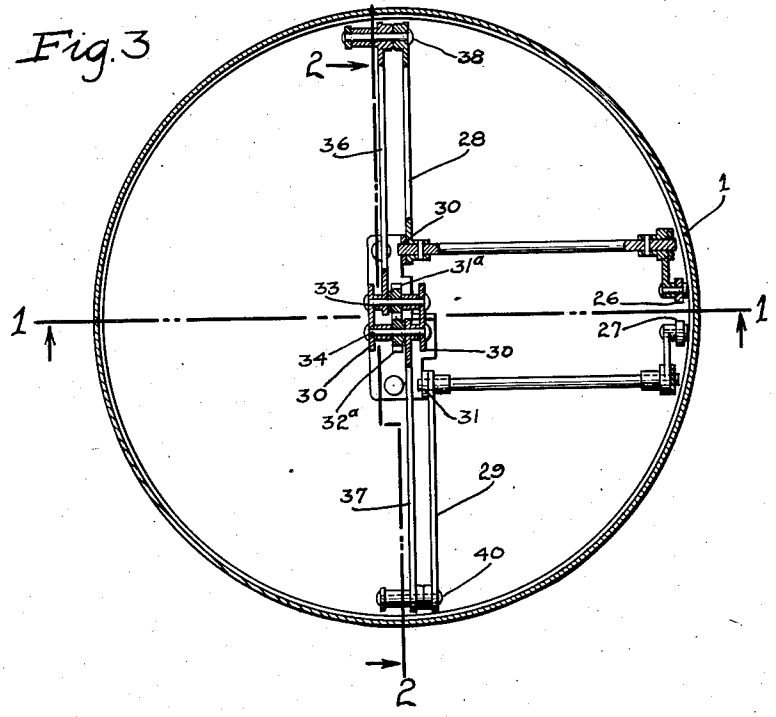


Fig. 4

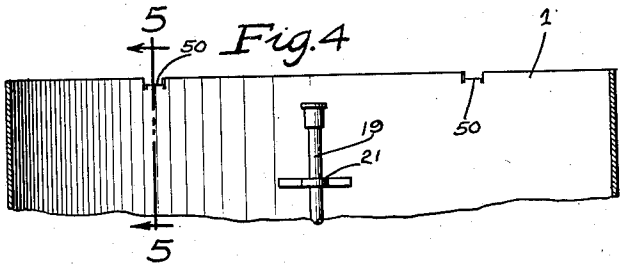
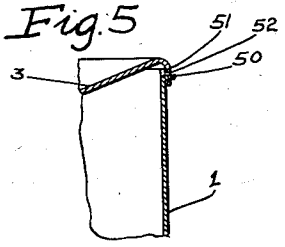


Fig. 5



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Fig. 6

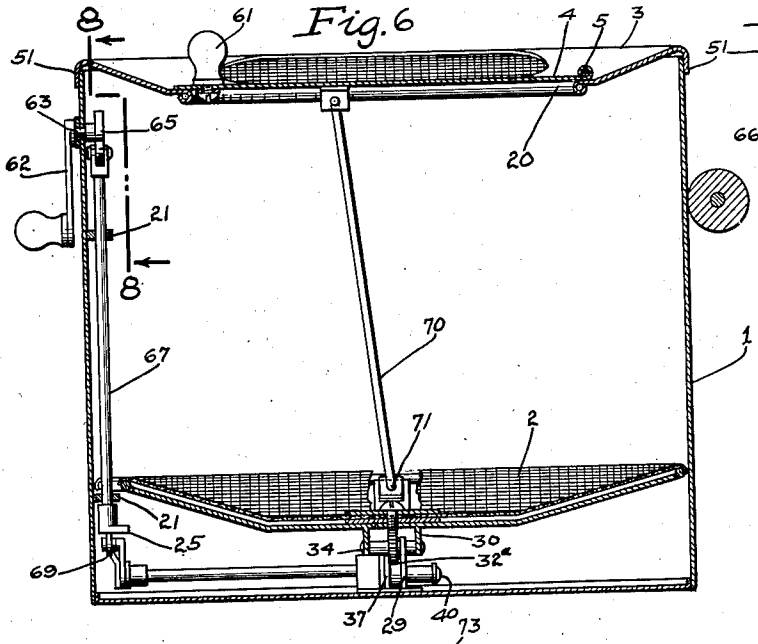


Fig. 8

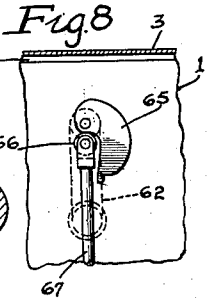
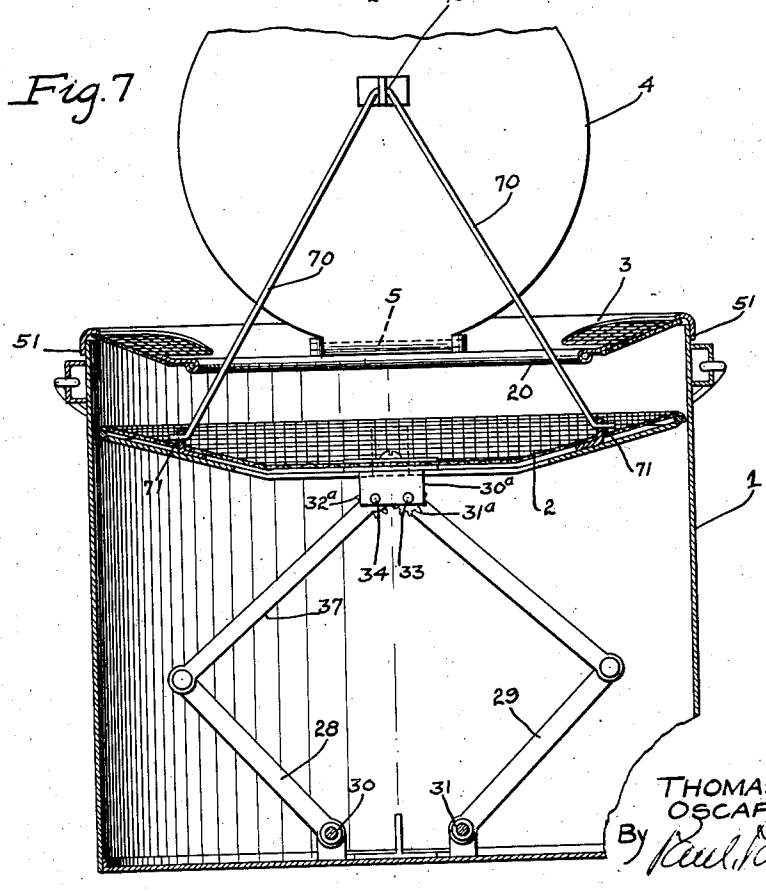


Fig. 7



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UNITED STATES PATENT OFFICE

2,002,572

MINNOW PAIL

Thomas C. Forbes, Hopkins, and Oscar R. Hedberg, Minneapolis, Minn.

Application July 10, 1930, Serial No. 467,032

12 Claims. (Cl. 43—56)

This invention relates to improvements in minnow pails and has, among its objects, to provide a pail having a hinged lid, and further having a perforate false bottom which bottom is movable vertically therein, and having means connecting this bottom to the lid of the pail, so that opening the lid moves the false bottom upwardly; to provide means other than a lid knob for automatically operating the lid to open it; to provide special constructions for connecting the lid and false bottom to move in unison in the manner mentioned; and generally to provide a simple inexpensive device by which the minnows can be brought adjacent the top of the pail when the lid is open.

Features of the invention include all the details of construction illustrated, along with the broader feature of automatic raising of the perforate false bottom, on opening of the lid.

Features and advantages of the invention will be set forth in the description of the drawings forming a part of this application, and in said drawings:

Figure 1 is a vertical section on line 1—1 of Figure 3, showing one embodiment of the invention in which the lid is adapted to be opened manually, and when so opened is adapted to automatically raise the perforate false bottom to bring the fish adjacent the top of the pail;

Figure 2 is a vertical section on line 2—2 of Figure 3, showing the lid open and the false bottom in raised position;

Figure 3 is a plan section on line 3—3 of Figure 1, with the mechanism positioned in correspondence to a lowered position of the false bottom, and closed position of the lid;

Figure 4 is a detail vertical section illustrating the manner of detachably securing the cover;

Figure 5 is a vertical section on line 5—5 of Figure 4 further illustrating the cover-attaching means;

Figure 6 is a vertical section showing a modified embodiment in which means, arranged at the side of the pail, is adapted to simultaneously move the false bottom and lid;

Figure 7 is a vertical section taken in a plane substantially at right angles to the plane of Figure 6; and

Figure 8 is a vertical section on line 8—8 of Figure 6 illustrating the lever-operated cam.

Numeral 1 indicates the bucket, numeral 2 the perforate vertically movable false bottom, numeral 3 the stationary, and 4 the pivoted lid.

The lid 4 is suitably pivoted at one side as at 5 to the detachable cover 3 and has a suitable latch 6 pivoted as at 7, the latch having a latch finger 8 which passes through an opening 9 of the cover 3, see Figure 1. A suitable spring 10 maintains the latch in operative position. The lid is provided with an extension 11 and to this extension is pivoted as at 12, a link 13. The opposite end of the link is pivoted at 14 to a bellcrank lever 15 pivoted as at 16 to the cover 3. The opposite arm of the bellcrank lever has pivoted thereto as at 18, a roller 17 which engages the end of a rod 19 arranged in parallel relation with the vertical wall of the bucket and held for translation in suitable bearings 21. Referring to Figure 2: The lower end of the rod 19 is broadened as at 25 and engaging the under surface of this broadened portion are two rollers 26—27 respectively carried by levers 28—29 pivoted at 30—31. The pivotal points of these levers lie substantially on a line which is diametrically related to the vertical axis of the pail, and symmetrically at each side of a diameter which passes through the axes of the pail and rod 19. In Figure 2, the levers are shown in full lines in raised position, but occupy the position shown in dotted lines when the false bottom is positioned as in Figure 1. Attached to the underside of the false bottom is a bracket 30^a and suitably journaled on this bracket are a pair of meshed gears 31^a—32^a, the shafts of which are indicated at 33—34. Referring to Figure 3: these shafts 33—34 are journaled in the bracket, and the gears rotate upon them. Pivoted to the shaft and attached to each gear is a link. These links are respectively indicated 36—37. The opposite end of the link 36 is pivoted as at 38 to lever 28, and the end of link 37 is pivoted as at 40 to link 29.

From an inspection of the drawings, it is evident that, as the lid 4 is moved from its position in Figure 1, to the position shown in Figure 2, link 13 acts on bellcrank lever 15 to depress rod 19, depress those arms of the levers 28—29 which carry the rollers 26—27. Levers 28—29 act on links 36—37 to raise the false bottom to the position shown. By the use of the gears, the false bottom is maintained in horizontal positions for all positions.

In order that the roller 17 may unfailingly be caused to register with the upper end of the rod 19, means is provided for assisting the operator in properly positioning the cover 3. To this end, the upper margin of the pail has outwardly turned lugs 50 spaced apart as shown in Figure 4, and the lid has a flange 51 having openings 52 therein spaced in correspondence to the spacing of the lugs 50. In applying the cover the openings 52 are registered with the lugs 50 as shown in Figure 5, and

then the lid is swung downwardly to operative position about these lugs as a hinging point.

By this construction, it will be seen that whenever the lid 4 is opened, the false bottom is raised, and when the lid 4 is in fully open position, the false bottom will occupy the position shown in full lines in Figure 2.

In the modification of Figure 6, means is provided whereby the lid 4 is opened by means other than by its knob 61. The essential difference between this embodiment of the invention and that first described is that in the second embodiment, the link 13 and lever 15 have been replaced by a lever- or crank-operated cam. The crank is indicated at 62 and is journaled as at 63 in the vertical wall of the pail. Suitably secured to the journal of this lever is a cam 65 shaped as best shown in Figure 8. This cam acts upon a roller 66 at the upper end of a shaft 67, which shaft corresponds to the shaft 19. The lower end of this shaft 67 acts against roller 69 and operates upon the levers 28—29, 36—37 and gears 31^a—32^a to raise the perforate false bottom 2, exactly in the manner previously described. In this instance the false bottom is pivotally connected to the pivoted cover 4 by means of a rod 70 formed as best shown in Figure 7. The terminals of this rod are pivoted as at 71 to the false bottom 2, and the bent portion is pivoted as at 73 to the cover 4. This connection merely provides means for causing the false bottom 2 and lid 4 to move in unison. It is conceivable that other connecting means may be employed without departing from the spirit of the invention.

It will be noted that when the lid is fully opened, the false bottom is drawn to a position substantially immediately adjacent the opening 20 of the cover 3. The false bottom is, therefore, progressively raised or lowered in accordance to the corresponding motion of the lid 4.

It will be noted that the toggles and gears provide means for moving the bottom and for preventing tipping of the bottom as it moves.

It will also be noted that the means for moving the bottom includes a manually operable pivoted or rotatable element accessible from the outside of the enclosure when the lid is closed. Moreover, means is provided by which the lid and bottom are caused to positively move in unison. Means is also provided by which the unison movement is in the same direction, and by which the bottom moves at a greater rate of speed than the lid. Thus the lid motion may be small, and by the means herein the lid will always assume a fully open position by the time the bottom has moved to its topmost position. It is obvious that the lid may be made to fully open before the bottom reaches its uppermost position. It is, moreover, to be noted that the element 70, see Figure 6, forms a positive connection (in this instance a thrust connection) by means of which the lid is opened as the bottom rises. It will be further noted that the link and lever connections 13—15, Figure 1, also provide means whereby even a slight pivotal motion of the cover, results in a relatively more extensive motion of the bottom. The same result is obtainable by other motion-multiplying means, such as the gears and toggle members shown.

We claim as our invention:

1. A live fish enclosure having a perforate bottom vertically movable therein, and having a hinged lid, and toggle and lever means connected to the enclosure and to the lid to cause the bottom to move toward the lid when the lid is opened.

2. A live fish enclosure having a hinged lid and a perforate bottom vertically movable therein, means connected to the enclosure and arranged beneath said bottom and adapted to raise and lower it, including meshing gears adapted to maintain the bottom in horizontal position, for all elevations, and means for moving the lid and bottom in unison in the same direction, the lid to open position and the bottom vertically and vice versa.

3. A live fish enclosure having a hinged lid, and a perforate bottom vertically movable therein, lever and link means connected to the enclosure and arranged beneath said bottom and adapted to raise and lower it, meshing gears associated with the links and adapted to be operated by said lever and link means to maintain the bottom in horizontal position, for all elevations, and means for moving the lid and bottom in unison in the same direction, the lid to open position and the bottom vertically and vice versa.

4. A live fish enclosure having a perforate bottom movable up and down therein, and so related to the wall of the enclosure as to prevent passage of fish between it and the wall, means within and connected with the enclosure and operating beneath the perforate bottom to raise it and lower it, and means for controlling the raising and lowering means arranged substantially wholly within the enclosure and including a control part which is operable from a point above the perforate bottom.

5. A live fish enclosure having a lid and a perforate bottom movable up and down therein and so related to the wall of the enclosure as to prevent passage of fish between it and the wall, means within and connected with the enclosure and operating beneath the perforate bottom to raise it and lower it, and means for controlling the raising and lowering means arranged within the enclosure and including a control part which is operable from a point above the perforate bottom, and means by which the lid controls the control part, to cause the bottom to be raised when the lid is opened.

6. A live fish enclosure having a perforate bottom movable up and down therein and so related to the wall of the enclosure as to prevent passage of fish between it and the wall, means within and connected with the enclosure and operating beneath the perforate bottom to raise it and lower it, means operated by the raising and lowering means for maintaining a level condition of the bottom as it moves, and means for controlling the raising and lowering means arranged substantially wholly within the enclosure and including a control part which is accessible from a point above the perforate bottom.

7. A live fish enclosure having a hinged lid, and a movable bottom so related to the wall of the enclosure as to prevent passage of fish between it and the wall, toggle means beneath the bottom for raising and lowering the bottom, and means by which bottom and lid move in unison so that the bottom moves from a point near the bottom of the enclosure to a point near but below the top thereof, while said lid is moving from closed to open position, and means accessible from a point above the bottom for controlling the toggle means.

8. A live fish enclosure having a perforated horizontally arranged bottom movable vertically therein, toggle means connected to the enclosure and bottom to raise and lower the bottom including means for maintaining the bottom level

at all positions, and means accessible from a point above the bottom for operating the toggle means.

9. A live fish enclosure having a perforate bottom vertically movable therein, multiplying toggle means within the enclosure below the bottom and connected to the enclosure and to the bottom to cause the bottom to move upwardly, including means for maintaining the bottom in substantially horizontal position at all levels, and means for controlling the toggle means.

10. A live fish enclosure having a perforate bottom vertically movable therein, and toggle and lever means within the enclosure and connected thereto and to the bottom to cause the bottom to move upwardly, including meshing gears for maintaining the bottom in substantially horizontal position at all levels.

11. A live fish enclosure having a hinged lid and a perforate bottom vertically movable therein, means connected to the enclosure and in part arranged beneath and in part attached to said bottom and adapted to raise and lower it, including means adapted to maintain the bottom in horizontal position for all levels, means by which the bottom moves the lid to open position as the bottom moves upwardly and vice versa, and means for controlling the first mentioned means.

12. A live fish enclosure having a hinged lid and a perforate bottom vertically movable therein, toggle means connected to the enclosure and arranged beneath and in part connected to the bottom and adapted to raise and lower it, including means adapted to maintain the bottom in horizontal position for all elevations, and means by which the bottom-moving means is operated by the lid to raise the bottom as the lid opens and vice versa.

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