

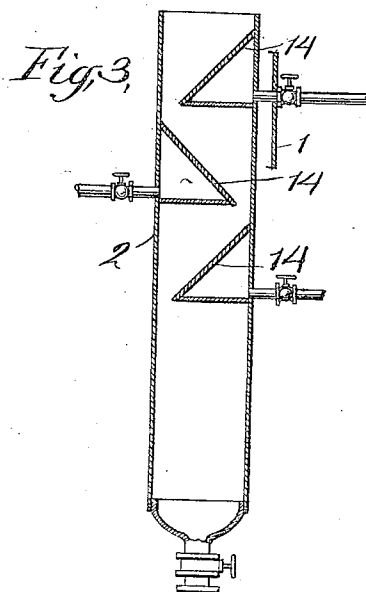
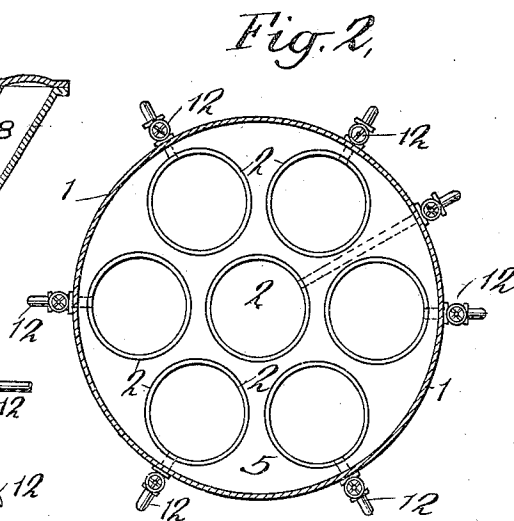
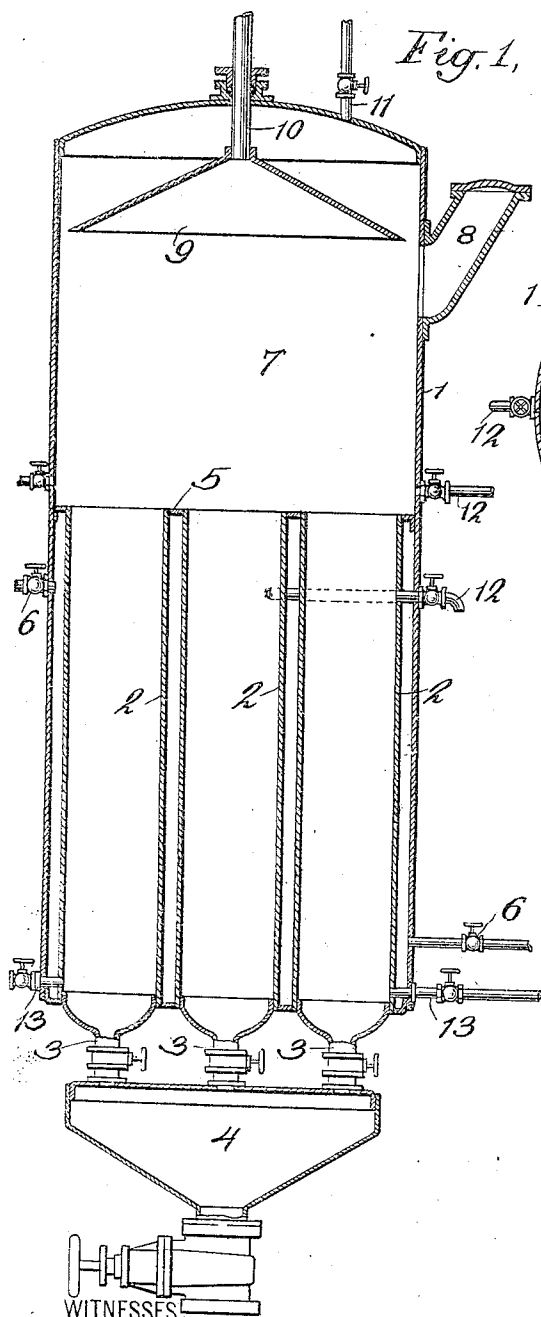
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PATENTED DEC. 18, 1906.

H. A. SILVERA.

APPARATUS FOR EXTRACTING OILS, &c.

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APPARATUS FOR EXTRACTING OILS, &c.

No. 838,658.

Specification of Letters Patent.

Patented Dec. 18, 1906.

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To all whom it may concern:

Be it known that I, HERBERT A. SILVERA, a citizen of the United States, residing at New York, in the borough of Brooklyn, county of Kings, and State of New York, have invented certain new and useful Apparatus for Extracting Oil, Grease, Isinglass, &c.; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in apparatus for extracting oil, grease, and glue from fish, animal, and vegetable matter, and is particularly intended for use in extracting oil, grease, isinglass, and the like from fish material.

My invention consists in dividing the interior of a digesting vessel into a plurality of relatively small digesting-chambers surrounded by an inclosed space into which hot water, steam, or other convenient heating agent may be introduced, said chambers communicating at the top with a larger chamber through which a charge may be introduced and the oil and grease liberated may be removed. By this construction I avoid the necessity of mechanically stirring the material being treated during the digestion. Stirring is to be avoided, because it tends to prevent separation of the oils and greases from the isinglass, glue, and other heavier materials liberated by the treatment and to form an emulsion, thus injuring both products.

My invention consists, further, in other novel features of construction of the digester, as hereinafter set forth, and more particularly pointed out in the claims.

The objects of my invention are to improve the construction of digesters and similar vessels employed in the extraction, separation, and purification of oils and greases, isinglass, gelatin, glue, and the like, to avoid stirring of the contents of the vessel while the process is being carried out, to facilitate the separation of the various products from each other and avoid intermingling of such products and the formation of emulsions, and generally to render the digester as simple, effective, and inexpensive as possible.

I will now proceed to describe my invention with reference to the accompanying drawings, in which one form of digester embodying my invention is illustrated, and will then point out the novel features in claims.

In the said drawings, Figure 1 shows a central vertical section of my improved digesting vessel. Fig. 2 shows a transverse section thereof looking down, the section being taken above the small digesting-chambers into which the lower portion of the vessel is divided. Fig. 3 illustrates the use of pockets within the digesting-chambers for catching solid matter, which tends to float upward therein.

The improved digester herein described comprises a main vessel 1, closed at the top and bottom. The lower portion of this vessel 1 contains a plurality of small digesting-chambers 2, the lower portions of which project through the bottom of vessel 1 and are provided with valved passages 3, connecting them with a collecting-chamber 4. The space within vessel 1 surrounding these chambers 2 is tightly closed by the bottom of vessel 1 and by a diaphragm 5, into openings of which the upper portions of said chambers fit closely, and suitable valved pipes 6 are provided for circulating hot water, steam, or other convenient heating agent through the space surrounding said chambers 2.

The upper portion 7 of vessel 1 forms a charging and oil-extracting chamber. At one side it is provided with a charging-passage 8, through which the material to be treated may be inserted into the vessel. Such charging-passage may be provided with any suitable closing device for closing it while the treatment within the vessel is taking place. The said chamber 7 is also provided with suitable means for removing and carrying away the oil and grease. For this purpose I preferably employ means such as described in the patent to D. H. Haywood, No. 675,949, for forcing off the oil by pneumatic pressure, such means comprising a cone 9, movable up and down within chamber 7, a pipe 10, forming a continuation of said cone, and a valved pipe 11 for admitting air or steam under pressure into chamber 7.

Suitable taps 12 are provided for drawing off isinglass and glue from the digesting-

chambers 2. Valved pipes 13 are provided for admitting hot water into chambers 2 to raise the oil and grease liberated into chamber 7.

5 The chambers 2 may be provided with inwardly-projecting hollow shelves 14, into which steam may be admitted to heat the contents of the chambers without direct contact with the contents. The tops of these
10 shelves are inclined to permit the solid matter to descend by gravity to the bottom of chambers 2 when the digester is charged, the solid matter falling from one shelf to the other.

In using this apparatus the material to be
15 treated is admitted through the charging-passage 8 and permitted to fall into the digesting-chambers 2. The charging-passage is then closed and steam or hot water of suitable temperature admitted to the space surrounding chambers 2, digestion being conducted in the ordinary manner. When digestion is completed, hot water is admitted to chambers 2 to raise the oil and grease into the upper chamber of vessel 1 and to dis-
20 solve the isinglass, gelatin, and glue liberated by the digestion. The oil and grease are drawn off by means of the cone 9 by admitting air or steam under pressure through pipe 11, as described in the said patent to
30 Haywood. The isinglass, gelatin, and glue in solution are drawn off through the side taps 12. The material remaining in the chambers 2 is then discharged into the collecting-chamber 4 by opening the valves in passages 3 and from the said collecting-chamber is discharged, when convenient, into any
35 suitable receptacle.

Because of the relative small size of the digesting-chamber 2 the heat of the steam
40 or hot water surrounding these chambers penetrates to the center of the mass within said chambers without any stirring or agitation of such mass. This is important, because it permits the oil and grease to rise
45 steadily by gravity as it is liberated and avoids mixing of the gelatin, isinglass, and glue therewith and the formation of emulsions, thereby insuring increased and improved yields both of the oil and grease and
50 of the isinglass, gelatin, and glue.

It will be obvious that the foregoing is but one embodiment of my invention and that the same is capable of many and varied modifications within the spirit and scope of my
55 invention, and, further, that certain parts may be employed in connection with other parts of different construction. Hence I do not desire to be limited only to the precise details of construction and combination of
60 parts therein.

What I claim is—

1. A digesting apparatus comprising a vessel divided into an upper chamber and a closed

lower chamber, the latter containing a plurality of smaller digesting-chambers closed at
65 the bottom and separated from each other by space through which a heating medium within the said closed chamber may circulate, said digesting-chambers communicating at
70 the top with the upper chamber of said vessel, the lower chamber of said vessel being provided with means for admitting a heating agent thereto and the upper chamber being provided with means for drawing off oil and
75 grease.

2. In digesting apparatus, the combination with a main containing vessel, a diaphragm therein dividing the same into upper and lower chambers, and digesting vessels within said lower chamber closed at the bot-
80 tom and communicating, through openings in said diaphragm, with the upper chamber of said vessel, space being provided between said chambers for the circulation of a heating agent, of means for admitting a heating agent
85 to said chamber said upper chamber being provided with means for drawing off oil and grease.

3. A digesting apparatus comprising a vessel subdivided into a plurality of relatively
90 small spaces closed at the bottom for the reception of the material to be treated and provided with means for subjecting each of such spaces to the direct action of the heating agent, and with means for drawing off oil
95 and grease from above.

4. In digesting apparatus, the combination with a vessel divided into closed lower and upper chambers, the former containing a
100 plurality of smaller digesting-chambers and provided with means for circulating a heating agent around the same, said digesting-chambers being closed at the bottom, of means actuated by fluid-pressure for drawing
105 off oil and grease from said vessel.

5. In digesting apparatus, the combination of a main containing vessel divided into an upper chamber and a closed lower chamber, digesting vessels within said lower chamber communicating with the upper chamber,
110 a receiving-chamber and discharge-passages connecting said digesting vessels with said receiving-chamber.

6. A digesting apparatus comprising a vessel divided into an upper chamber and a
115 closed lower chamber, the latter containing a plurality of smaller digesting-chambers separated from each other by space through which a heating medium within the said closed chamber may circulate, said digesting-chambers communicating at the top with the upper chamber of said vessel, and having in
120 their sides inwardly-projecting hollow heating-shelves, the tops of which are inclined, said shelves communicating with the space
125 surrounding the digesting-chambers, the

lower chamber of the vessel having means for admitting a heating agent to said space.

7. A digesting apparatus comprising a vessel subdivided into a plurality of relatively
5 small spaces closed at the bottom for the reception of the material to be treated, and provided with means for subjecting each of said spaces to the direct action of the heating

agent, and with means for drawing off oil and grease therefrom.

In testimony whereof I affix my signature
in the presence of two witnesses.

HERBERT A. SILVERA.

Witnesses:

C. F. CARRINGTON,

H. M. MARBLE.