

(No Model.)

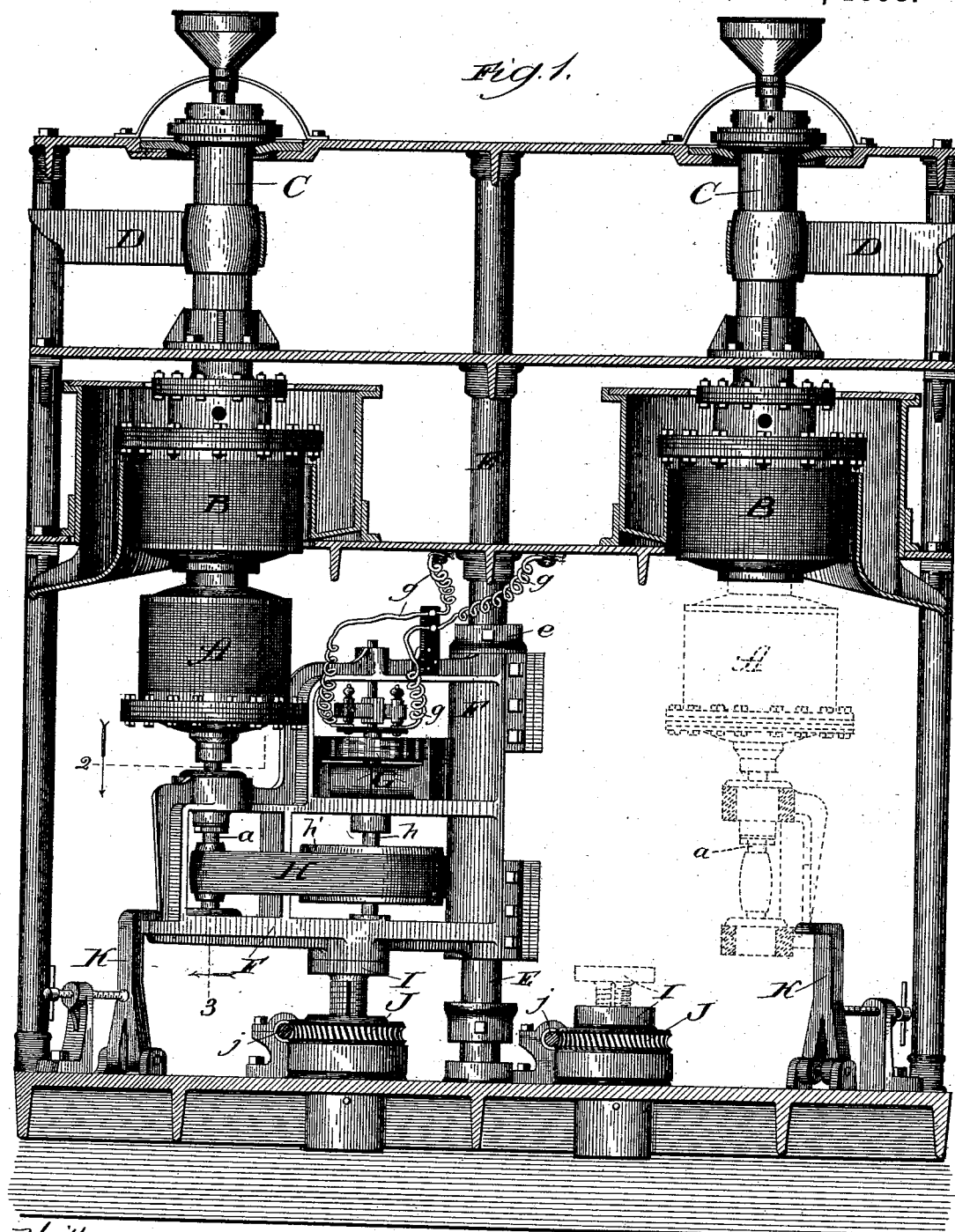
3 Sheets—Sheet 1.

O. B. PECK.

MACHINE FOR CENTRIFUGALLY TREATING MOLTEN MATERIALS.

No. 491,131.

Patented Feb. 7, 1893.



Witnesses:
 Geo. E. Gaylord,
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Inventor
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(No Model.)

3 Sheets—Sheet 2.

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Fig. 2.

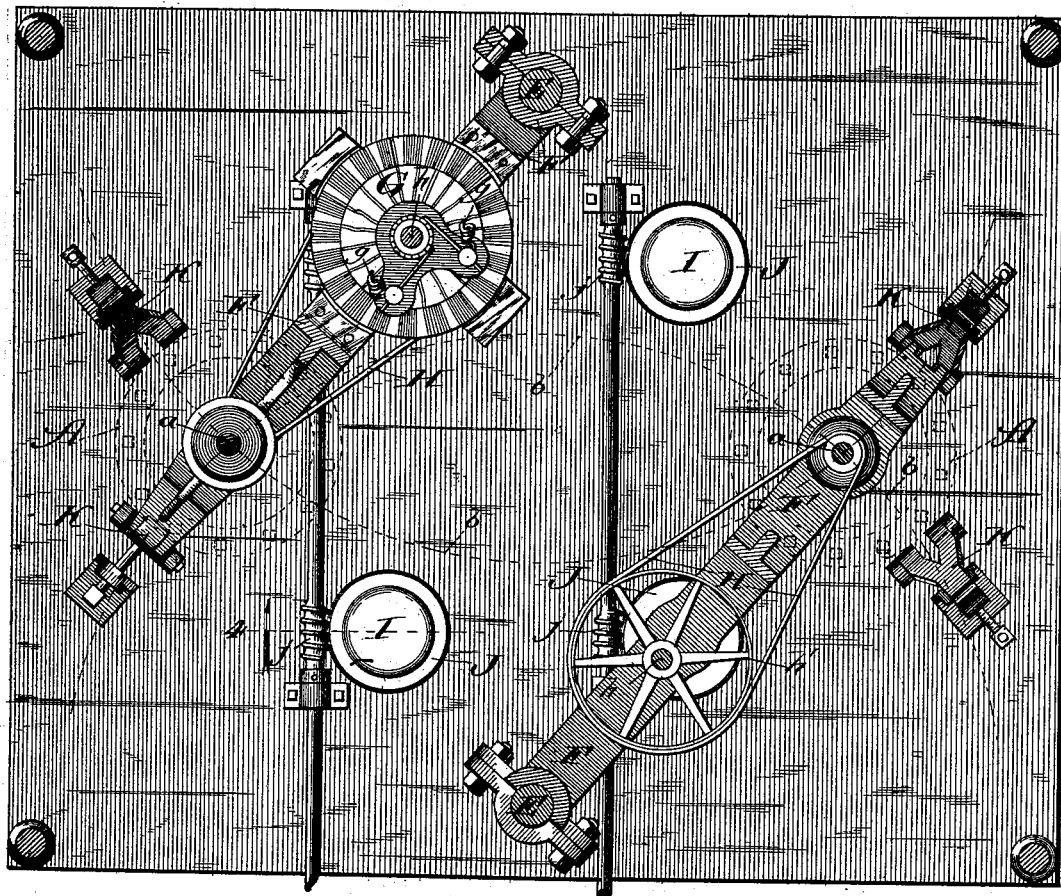
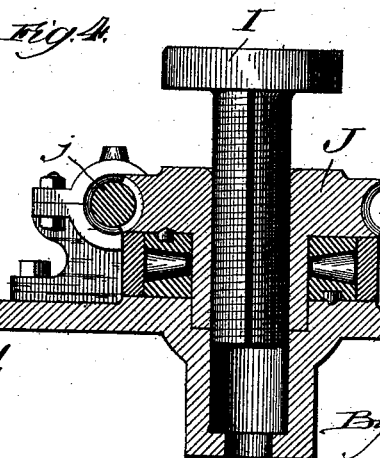


Fig. 4.



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(No Model.)

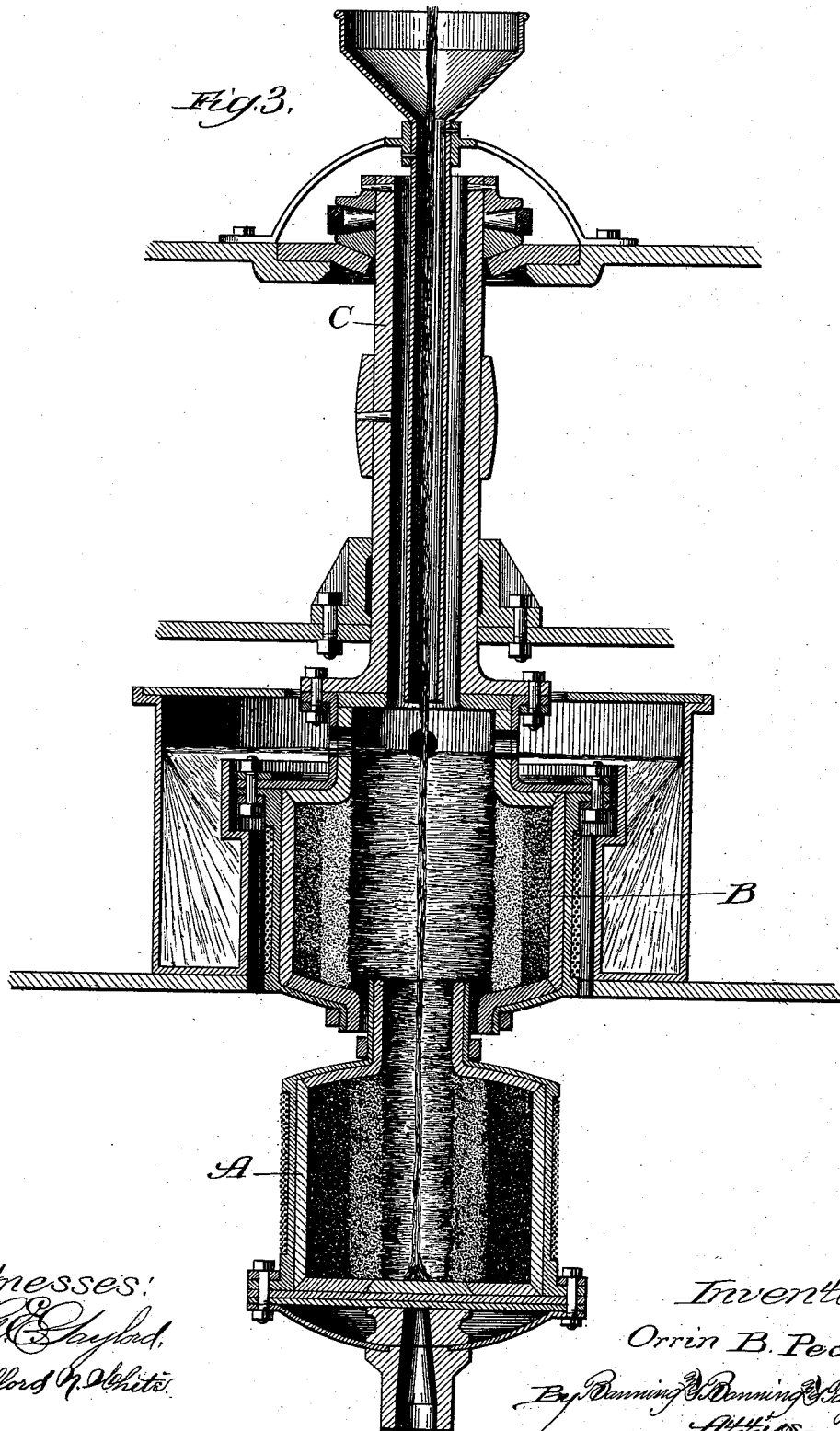
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O. B. PECK.

MACHINE FOR CENTRIFUGALLY TREATING MOLTEN MATERIALS.

No. 491,131.

Patented Feb. 7, 1893.



Witnesses:
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UNITED STATES PATENT OFFICE.

ORRIN B. PECK, OF CHICAGO, ILLINOIS, ASSIGNOR TO MELINDA PECK, OF
SAME PLACE.

MACHINE FOR CENTRIFUGALLY TREATING MOLTEN MATERIALS.

SPECIFICATION forming part of Letters Patent No. 491,131, dated February 7, 1893.

Application filed May 24, 1890. Serial No. 353,070. (No model.)

To all whom it may concern:

Be it known that I, ORRIN B. PECK, a citizen of the United States, residing at Chicago, Illinois, have invented certain new and useful Improvements in Machinery or Plants for Centrifugally Treating Molten Material, of which the following is a specification.

The object of my invention has more especial reference to those cases where two or more revoluble vessels are employed in series, or operated in conjunction, and in which a part of the material is discharged from one to another according to the specific gravity or density of its component parts, each vessel in the series accumulating and retaining material of lighter specific gravity than the one preceding it, and in which it is desirable that one of the vessels should be run a longer time than the other before becoming filled, and hence may be, or is required to be, used or operated successively in two or more series without stopping its rotation; and my invention consists in the features, combinations and details of construction hereinafter described and claimed.

In the drawings Figure 1 represents a side elevation, partly in section, of my improved machinery and plant; Fig. 2 represents a plan view of the same on the line 2 of Fig. 1 looking in the direction of the arrow; Fig. 3 represents a vertical section taken on the line 3 of Fig. 1, looking in the direction of the arrow, and Fig. 4 represents a vertical section taken on line 4 of Fig. 2, looking in the direction of the arrow.

In the operation of a series of revoluble vessels in which the material to be treated is introduced into one where its heaviest particles are accumulated and retained by the action of centrifugal force, and its lighter particles discharged therefrom into another revoluble vessel and again subjected to the action of centrifugal force, and so on through a series of two or more revoluble vessels, each accumulating a portion of the material treated in the order of its specific gravity, the lightest particles being discharged at the last vessel in the series, it almost always occurs that one vessel in the series becomes filled with its proper material and ready to be emptied before the other becomes filled.

In order to finish filling the one not yet completely filled with its proper material, it is necessary to introduce and treat more material in it before emptying it, and to enable this to be done without loss of the materials that should be collected and retained in the vessels already filled, it is necessary to change or remove one of the vessels and operate the vessel that is not yet filled with another empty or partly empty one that will receive and collect the material proper to be retained in it. As new material is again introduced after the change the operation of separating and classifying is continued until it may occur that the vessel that was before partially filled, or has been operated the greatest length of time, has become wholly filled with a practically uniform quality or character of material, being that appropriate to be collected in it, before the vessel last started has become filled and ready to be emptied, and the operation of changing them quickly and supplying another vessel appropriate to operate with the partially filled one must be repeated. I have found it necessary to therefore devise means that will enable me to continue any particular vessel in operation while emptying another, and to change it while in operation to operate in conjunction with another vessel.

In the accompanying drawings I have illustrated a machine or plant in which I contemplate using four revoluble vessels, two suspended from hollow shafts and intended to be operated in a fixed location with reference to the other parts and two vessels mounted on the upper ends of vertical shafts suitably journaled in a swinging arm or frame and movable therewith in such a way that either of them may be swung around by its arm directly under either of the suspended vessels, or may be swung farther around out of the way.

In constructing my machinery or plant as shown in the drawings, A A represent vessels either of which is intended and adapted to be swung around under and be operated in conjunction with either of the vessels B B fixed in their location with reference to the other parts. The vessels B B are suspended on the revoluble shafts C C which are located in a fixed position so that the vessels B B always keep the same position or location

with reference to the other parts of the machinery. These vessels may be rotated by means of belts D D connecting with the engine, or with any other convenient motive power. They are suspended at such height above the floor or bottom plate of the machinery as may be deemed proper and desirable, and adapted to allow the vessels A A to be swung or passed under them.

Equi-distant from the shafts C C are arranged columns or posts E E, one for each of the vessels A, securely held, braced and supported, in the desired position.

The arm or support F consisting of a suitable framework of sufficient size and strength is pivoted on each of the columns or posts E E so that it may be rotated or swung about it as a center or axis. This arm through a suitable revoluble shaft *a* supports one of the revoluble journaled vessels A A, so that as it is moved or swung about the column the vessel will be carried with it. To furnish a motive power by which such vessel may be rotated, and that will not be impaired or interfered with by the movement of the arm, I prefer to locate on the arm an electric motor G which receives its electricity from any proper generator or dynamo through suitable conductors *g*. By thus locating the motor it will be swung or moved around with the arm F and through the shaft *a* and pulley *h'* and the belt *h* and the belt H, or other sufficient connections, it will be able to revolve the shaft *a* and its appropriate vessel at the desired rate of speed.

To assist in supporting and rigidly holding or steadying the arm with its load, and also to provide means for moving it up so as to bring its vessel into proper relation to the vessels B B when they are to be operated in conjunction, the former first having been swung in proper position immediately under the latter, and to again lower it when desirable, I provide a jack I provided with a threaded leg so that the worm wheel J rotated by the worm shaft *j* may run it up or down carrying the arm and its proper vessel with it. To further assist in holding the arm in place after its vessel is in position I employ the clutch K that may be operated in any convenient manner to engage with the end of the arm which, together with the rigidly secured collar or stop *e* on the post E at the proper point above the arm, holds down against the upward pressure of the jack, and in addition to preserving the arm from violent vibrations, also affords a rigid stop to prevent its being raised beyond the proper point by the jack. Of course it will be understood that the jacks are located in the proper position to operate on the frame when the vessels A A are properly under the vessels B B. After the particular vessel B which is being operated has become filled so that it is ready to be emptied, the vessel A may be lowered and swung from beneath it around into position under the other vessel B, thus

forming another series. The vessel may then be again raised so that its mouth will discharge into the vessel B.

It will be understood that during the operation of transferring the vessel from one to another no new material is to be introduced and the material already in the vessel will be held in place by the action of centrifugal force. No discharging of material can take place during the transfer if no new material be introduced, and the change of one vessel to another is intended to be effected so quickly that the molten material contained in it will not be sufficiently cooled to impair continued effective operation.

In Fig. 2 of drawings the course of both of the vessels A A as they are swung around is indicated by the dotted lines *b—b*, and the two points at which they cross are on a vertical line of location of the suspended vessels B B directly under them. Thus it will be seen that either of the vessels A A will be carried around by the arms F and brought directly under either of the vessels B B, and also when desired they may be swung clear around, or to the opposite side of the posts E E, out of the way, to be emptied. It will also be seen from an inspection of this figure that if either of the vessels A A are properly under either of the vessels B B that one of the jacks is properly under the frame ready to lift it. It will further be understood that in the particular arrangement illustrated in the drawings and described above, the material to be treated is introduced through the hollow shaft of the suspended vessel, as more particularly shown in Fig. 3.

In the drawings I have illustrated and contemplated the use of four vessels, the two lower ones of which are suitably mounted and adapted to be moved or swung around on axes in a circle; but it is obvious that a less or greater number of vessels may be arranged in one plant or machine to be operated together, and that the upper or suspended vessels instead of the lower ones may be made movable.

In view of the modifications of arrangement that can obviously be made, and still embody my invention I do not desire to confine myself to the exact arrangement or construction shown, but propose to use the principles and ideas above explained, whether in the exact form shown and described or not.

What I regard as new, and desire to secure by Letters Patent is,

1. In machinery for centrifugally treating molten material, the combination of two or more revoluble vessels in series through which molten material successively passes for treatment, and supports for at least one of the revoluble vessels so constructed that it may be moved out of conjunction with the other without stopping its rotation, substantially as described.

2. In machinery for centrifugally treating molten material, the combination of two or

more revoluble vessels in series through which molten material successively passes for treatment, and supports for at least one of the revoluble vessels so constructed that it may
5 be moved out of conjunction with the other without stopping its rotation, and another revoluble vessel into conjunction with which the movable vessel may be brought to form a new series, substantially as described.

- 10 3. In machinery for centrifugally treating molten material, the combination of two or more revoluble vessels in series through which molten material successively passes for treatment, and in which at least one of the revoluble
15 vessels is mounted on a swinging arm or frame by which it may be moved out of con-

junction with the other without stopping its rotation, substantially as described.

4. In machinery for centrifugally treating molten material, the combination of two or
20 more revoluble vessels in series through which molten material successively passes for treatment, and in which at least one of the revoluble vessels and the means for effecting its rotation are mounted on a swinging arm or
25 frame by which it may be moved out of conjunction with the other without stopping its rotation, substantially as described.

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Witnesses:

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