F. MERZ.

CRYSTALLIZING RECEPTACLE.

APPLICATION FILED FEB. 24, 1920.

1,366,474.

Patented Jan. 25, 1921.

3 SHEETS—SHEET 1.

FIG. 1

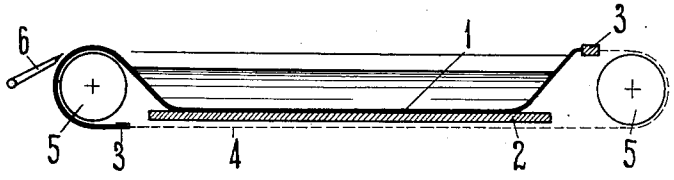


FIG. 3

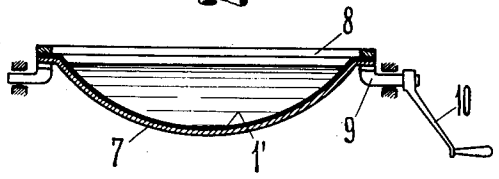
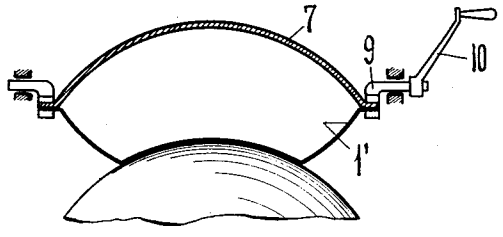


FIG. 4



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3 SHEETS—SHEET 2.

FIG. 2

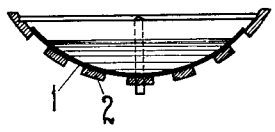
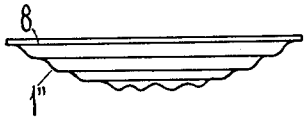


FIG. 5



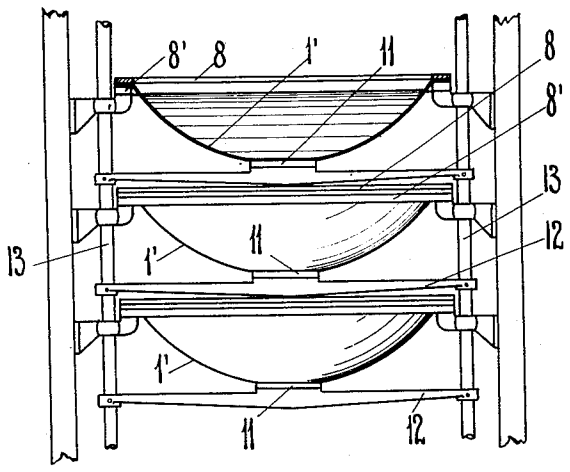


FIG. 6

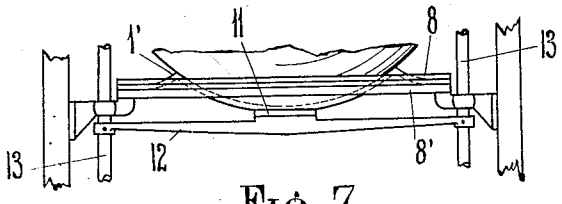


FIG. 7

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3 SHEETS—SHEET 3.

FIG. 8

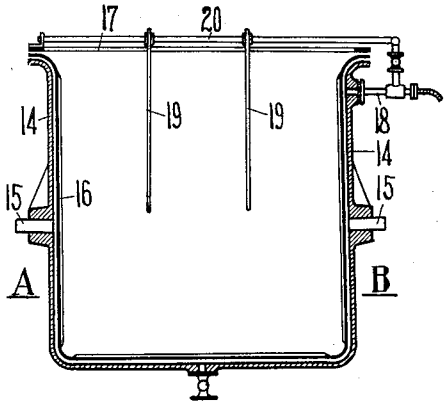


FIG. 10

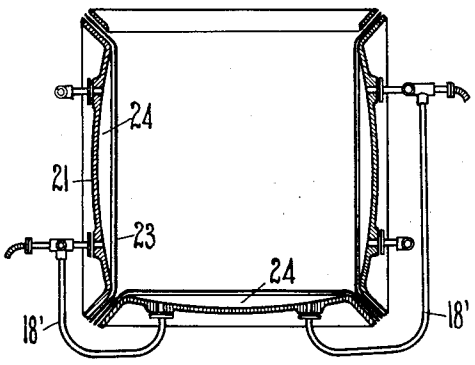


FIG. 9

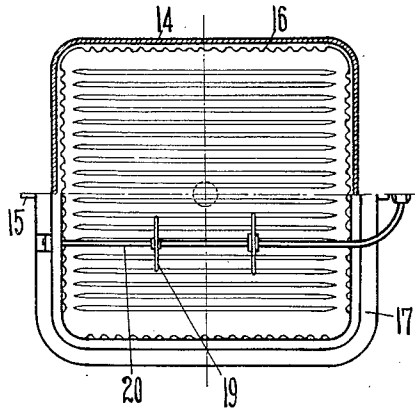
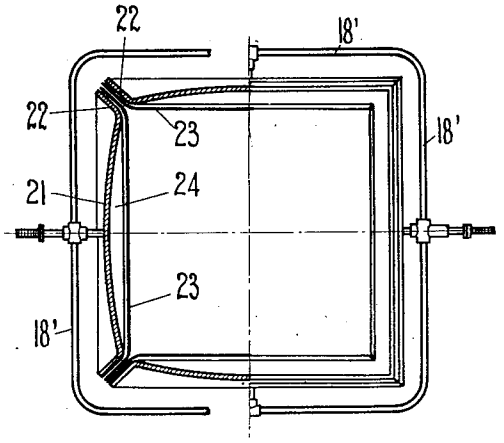


FIG. 11



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UNITED STATES PATENT OFFICE.

FRANCO MERZ, OF VERCELLI, ITALY.

CRYSTALLIZING-RECEPTACLE.

1,366,474. Specification of Letters Patent. Patented Jan. 25, 1921.

Application filed February 24, 1920. Serial No. 360,953.

To all whom it may concern:

Be it known that I, FRANCO MERZ, citizen of the Republic of Switzerland, residing at Vercelli, Italy, have invented certain new and useful Improvements in Crystallizing-Receptacles, of which the following is a specification.

The present invention relates to receptacles used for the crystallization of solutions of different kinds, and has for its object to provide improved receptacles so arranged as to render easy and complete the separation of the crystals which in ordinary receptacles adhere firmly to the walls and thus render necessary a long and difficult operation for their detachment.

In accordance with the present invention the crystallizing receptacle, whatever its form, has the walls on which the crystals form, of flexible or pliable material supported or mounted if desired on a rigid support and which may be deformed in such manner as to insure detachment of the crystals.

In the accompanying drawing are shown by way of example several embodiments of the invention applied to crystallizing receptacles of different types. Figures 1 and 2 are respectively longitudinal and transverse sections of a basin of elongated form; Fig. 3 is an axial section of a receptacle in the form of a spherical container in normal position; Fig. 4 is a section of the said receptacle in discharge position; Fig. 5 is a section similar to Fig. 3 of a modification; Fig. 6 shows partly in axial section and in normal position an apparatus formed of a pile of spherical receptacles; Fig. 7 is a view of one of these receptacles in discharging position; Fig. 8 is an axial section of another form of receptacle in a single piece; Fig. 9 is a horizontal section on line A—B of Fig. 8 and Figs. 10 and 11 are similar views of a receptacle made of several parts.

In the construction shown in Figs. 1 and 2 the receptacle is formed by a strip 1 of flexible and impermeable material such for example as caoutchouc, water proof fabric, etc., mounted on a support which may consist for example of bars 2, the ends of said strip being connected to cross members 3 connected by a strip of canvas or bands 4 forming, with the strip 1, an endless band mounted on two drums 5.

By rotating one of the drums 5 the band 1 is caused to ride over one of them in such manner that the base of the receptacle thus formed flattens out in the transverse direction and bends in the longitudinal direction effecting separation of the crystals which adhere to the bottom of the receptacle.

It is desirable that one of the ends of the band should always be above one of the drums 5, and that a plate 6 should bear on the surface of the said band so as to direct the crystals into the receptacle arranged to receive them.

In the construction shown in Figs. 3 and 4 the receptacle is formed by a bag of flexible material surrounding a rigid basin 7, made for example of wood, canvas, metal mesh, etc., and mounted by means of a ring 8 locking the edge of the bag 1′ to that of the rigid basin 7. The latter comprises two diametrically opposite trunnions 9 mounted in suitable supports, one of the trunnions being connected with a crank handle 10 by which the receptacle may be overturned by rotating it about its supporting axis.

To effect separation of the crystals formed in the receptacle the latter is overturned as shown in Fig. 4 and then the flexible bag 1′ under the weight of the crystals which adhere to its surface is caused to separate from the rigid receptacle 7, the bag being thereby deformed and the crystals consequently separated in a manner similar to that previously described.

The modification illustrated in Fig. 5 differs from that shown in Fig. 3 only in this that in lieu of a flexible bag attached to a rigid support a bag 1″ of corrugated sheet metal is employed which bag while sufficiently rigid to support the weight of the material is sufficiently flexible to be deformed permitting the separation of the crystals adhering to its surface.

In the construction shown in Fig. 6 each crystallizing receptacle is formed by a bag 1′ of flexible material the edge of which is locked between two rings 8 and 8′ and the base of which rests on a supporting plate 11 mounted in such manner that it may be raised to effect the lifting of the crystallized material and in consequence the deformation of the flexible bag as also the separation of the crystals as shown in Fig. 7.

In the construction shown in Figs. 6 and 7 each plate 11 is carried by the transverse members 12 mounted on vertical columns 13 adapted to slide in guides in the rings or

frames 8 and 8′ of the different receptacles, but naturally the displacement of the plates 11 may be effected in any other manner which will cause the deformation of the bag 1′.

In the construction shown in Figs. 8 and 9 the crystallizing receptacle is formed by a rigid basin 14 which may be fitted with trunnions 15 so that it may be overturned said basin being provided with a lining 16 of flexible material fixed to the mouth of the basin 14 by being clamped at its edges by means of a ring 17. The lining 16 is preferably corrugated but it may also be flat and in all cases between the walls of the basin 14 and the lining 16 there should be provided a space to which may be connected a pipe 18 so that there may be introduced into this space a fluid under pressure by which the lining may be pressed inward, the crystals adhering thereto being thus detached.

When the crystallizing receptacle is provided with strips or metal rods extending into the solution so as to facilitate the formation of the crystals these strips are formed in accordance with the invention by hollow elements 19 constituted for example by thin blades connected at their edges in such manner as to comprise between them a space communicating with a hollow rod 20 serving at the same time to support them and which is connected with the pipe 18.

In this manner by the injection of a fluid under pressure through the pipe 18 the hollow elements 19 may be inflated and thus deformed and the detachment of the crystals adhering to their surface thereby effected.

If the crystallizing receptacle is to be made of several parts the construction shown in Figs. 10 and 11 may be employed in which the basin is formed by the connection of several elements each formed by a plate 21 comprising flanges 22 and a concave surface in front of which is stretched a flexible sheet 23 the edges of which are fixed to the edges of the plates.

Each element thus comprises a chamber 24, all these chambers 24 being connected to a pipe 18′ through which fluid under pressure may be introduced or a depression created in the chambers 24.

By introducing into the chambers 24 a fluid under pressure or creating in them a depression or by combining these two operations the flexible wall 23 will be deformed in such wise as to effect detachment of the crystals adhering thereto.

With elements such as 21 to 23 and comprising a deformable wall there may be formed naturally receptacles of any shape and desired dimensions and of quadrangular or polygonal section provided the necessary form is given to the different elements constituting the walls and to the element intended to constitute the basin.

In all cases the different elements are assembled by clamping together their edges 22 between which is held the edge of each flexible wall 23.

With the constructions described there may be obtained a crystallizing receptacle in which the detachment of the crystals is effected by the deformation of an internal flexible wall under the action of a pressure or of a depression in the chamber bounded by the said wall the existence of such a chamber presenting also the advantage that there may be established in the receptacle a circulation of a cold fluid so as to accelerate or regulate the formation of the crystals.

What I claim as my invention and desire to secure by United States Letters Patent is:—

1. In a crystallizing receptacle, walls made of flexible and impermeable material for receiving the crystals, supporting means for said walls and means to cause a deformation of said walls in order to produce the detachment of the crystals.

2. In a crystallizing receptacle, walls made of flexible and impermeable material for receiving the crystals, supporting means for said walls and means to displace said walls with respect to said supporting means in order to produce the detachment of the crystals.

3. In a crystallizing receptacle, walls made of sheets of flexible and impermeable material for receiving the crystals, supporting means for said sheets, a space being left behind said sheets, and means for varying the pressure in said space in order to cause a deformation of said walls.

4. In a crystallizing receptacle, circumferential walls made of sheets of flexible and impermeable material, a supporting plate for each of said sheets, said supporting plates providing a space behind said sheets, hollow members made of flexible and impermeable material, and means for varying the pressure in said space and in said hollow members for causing a deformation of said walls.

5. In a crystallizing receptacle, circumferential walls made of sheets of flexible and impermeable material, a supporting plate for each of said sheets, said supporting plates providing a space behind said sheets, means connected to said plates for varying the pressure in said space to produce a deformation of said walls and means connected with said plates for producing a circulation of a cold fluid into said space.

In testimony whereof I affix my signature.

FRANCO MERZ.