

H. C. BEHR.
 MEANS FOR HANDLING AND DISTRIBUTING DEWATERED CRUSHED ORE PRODUCTS, &c.
 APPLICATION FILED JAN. 27, 1908.

956,669.

Patented May 3, 1910.

3 SHEETS—SHEET 1.

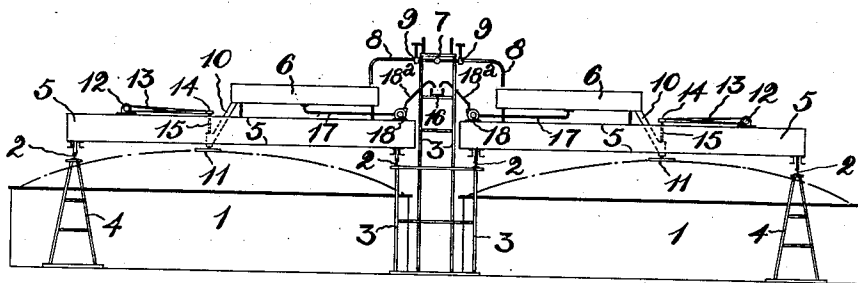


Fig. 1.

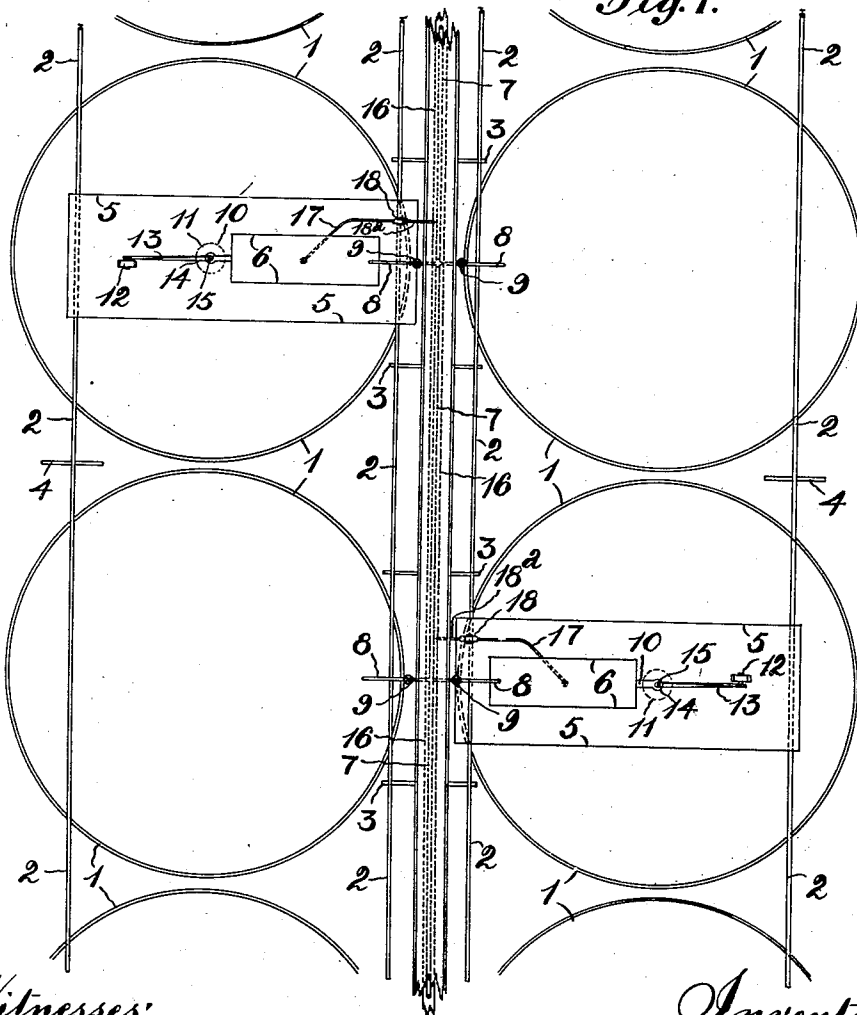


Fig. 2.

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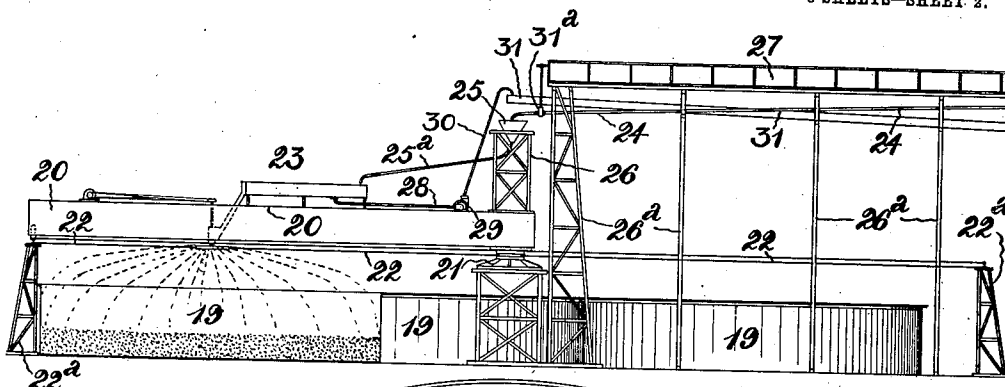


Fig. 3.

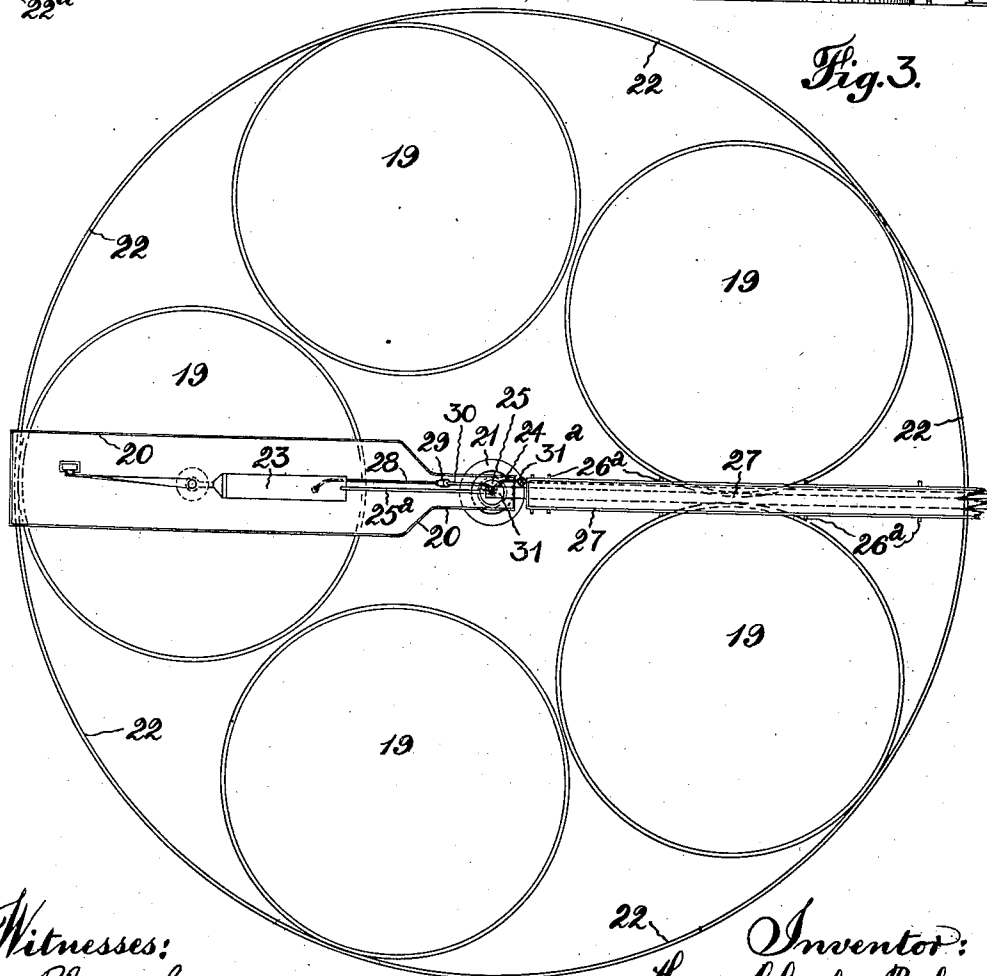


Fig. 4.

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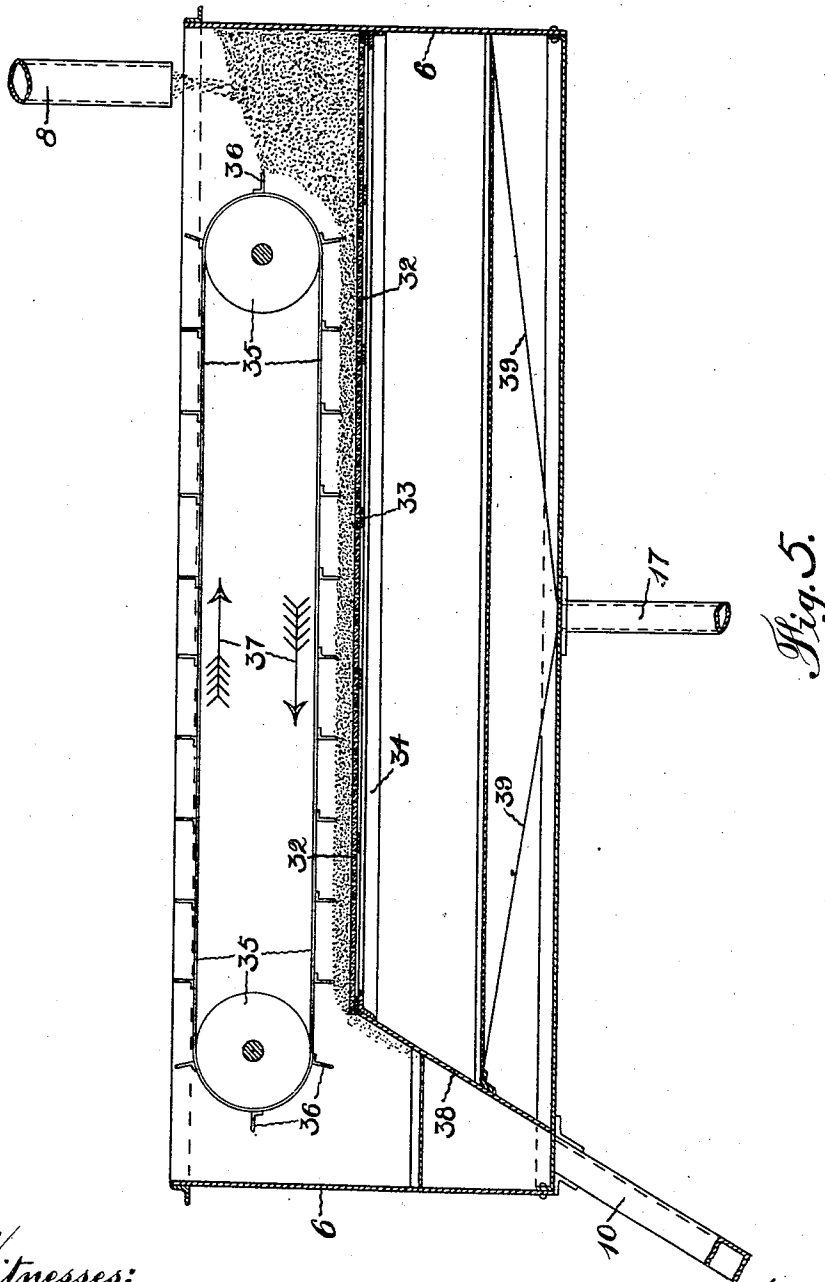


Fig. 5.

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UNITED STATES PATENT OFFICE.

HANS CHARLES BEHR, OF JOHANNESBURG, TRANSVAAL.

MEANS FOR HANDLING AND DISTRIBUTING DEWATERED CRUSHED-ORE PRODUCTS, &c.

956,669.

Specification of Letters Patent.

Patented May 3, 1910.

Application filed January 27, 1908. Serial No. 412,810.

To all whom it may concern:

Be it known that I, HANS CHARLES BEHR, a citizen of the United States, and resident of Johannesburg, Transvaal, have invented certain new and useful Improvements in Means for Handling and Distributing Dewatered Crushed-Ore Products, &c., of which the following is a specification.

This invention has reference to means for dewatering or separating water, solvent solution, or other liquid from crushed ore products or other granular or pulverulent material and for delivering the dewatered product into tanks, vats, pits or the like, for treatment by cyanide or other solvent solutions, water washes, or other liquids.

The object of the invention is to provide a transportable dewatering apparatus or device adapted to be placed in position above any one of a plurality of treatment tanks or the like, for dewatering the crushed ore product or the like, and delivering the dewatered product thereinto.

In accordance with my invention I provide a carriage or wheeled bridge or frame for carrying the dewatering apparatus or device, which carriage is adapted to traverse a track or rails suitably supported over the treatment tanks or the like. The mill pulp, crushed ore products or mixture of granular or pulverulent material and liquid, may be conveniently conducted by a pipe or launder arranged in a suitable position in relation to the tanks and track, and provided with outlets fitted with valves, gates or their equivalent at the different positions into which the dewatering apparatus is placed for discharging the dewatered material into the several treatment tanks. The water or other liquid separated from the crushed ore products etc. may be conveniently conducted away from the dewatering apparatus by means of a launder or pipe suitably arranged in relation to the several treatment tanks and track.

The invention will now be more fully described by aid of the accompanying drawings wherein:

Figure 1 illustrates one form of my invention in elevation, and Fig. 2 represents it in plan. Fig. 3 depicts a modified form of the invention adapted to a circular disposition of the treatment tanks or the like, and Fig. 4 represents it in plan.

Fig. 5 is a sectional elevation of a dewatering apparatus.

Referring more particularly to the arrangement illustrated in Figs. 1 and 2, the several treatment tanks represented at 1, are shown arranged in two parallel rows; each row may consist of any desired number. For each row of tanks I provide an overhead track or rails 2, the inner or contiguous rails of which are carried by trestles or supports 3 and the outer rails by conveniently disposed trestles or supports 4. For each track a carriage or wheeled bridge or frame 5 is provided, which carriages are adapted to traverse from end to end of their respective tracks 2 in order that they may be placed centrally or otherwise as preferred over any one of their series of tanks 1. Upon each carriage 5 is mounted a dewatering apparatus 6 of any suitable construction. It may for example consist of a rotary filter, or a launder provided with a filter in the bottom, or a centrifugal separator working either intermittently or continuously as required. 7 represents a pipe line positioned above the level of the tops and between the two rows of tanks 1, and carried by the trestles 3, for conducting the mill pulp, crushed ore product or mixture of granular or pulverulent solids and liquids, to the dewatering apparatus 6 in their several positions above the treatment tanks. 8 are branch pipes, of which one is provided for each tank, for conducting the mixture from the pipe line 7 to the dewatering apparatus. These branch pipes 8 are fitted with valves or cocks 9 in order to regulate the supply. The dewatering device 6 is equipped with a discharge chute 10 for conducting the separated solids either direct into the treatment tanks, or as shown on to a rotatable table or plate 11, for distributing the solids inside the tank. 12 represents a suitable motor, 13 a belt, 14 a pulley and 15 a shaft for driving the table 11 at a suitable rate of speed. Any other suitable driving means for the distributor may be substituted for those shown and described. 16 represents the launder shown located above the level of the tops of the tanks at or about the level of the dewatering device 6, and beneath the pipe line 7, and carried by the trestles 3, for receiving the separated liquid from the dewatering de-

vice and for conducting it to any desired point. The dewatering device is equipped with a drainage pipe 17 shown leading to a pump 18 which serves for elevating the separated liquid to the launder 16.

The dewatering apparatus may be constructed either in the manner shown in Fig. 5 or in any other suitable manner. In Fig. 5 it is shown comprising a rectangular box fitted at or about the center of its height with a perforated plate 32 or its equivalent supported by transverse laths 33 carried by longitudinal bars or members 34 of L or any other suitable section. 35 represents a scraper conveyer arranged in the upper portion of the box above plate 32 in such a position that the scrapers 36 of said conveyer project to within a suitable short distance of the top of said plate as shown, in order to insure that a quantity of the filtered solids shall remain on the surface of the plate 32 to constitute a portion of the filter bed. The direction of travel of the scraper conveyer 35 is indicated by the arrows 37. The scrapers 36 operate, as will be well understood, to scrape the solids from the receiving to the outlet end of the dewatering apparatus. 38 represents an inclined plate or chute which serves for deflecting the solids to an aperture through which they pass to the inclined chute or launder 10 delivering them on to the rotatable distributing plate or disk 11. The compartment formed beneath the perforated plate 32, as indicated at 39, is preferably constructed with inclined sides leading to the inlet orifice of drainage pipe 17. The action of the pump 18 by establishing a partial vacuum in the chamber beneath plate 32 draws the filtrate or separated liquid component of the pulp or mixture of solids and liquids through the interstitial spaces existing between the grains or particles of the solids and through the perforations in the plate into said compartment, whence it flows through pipe 17 to pump 18 and is delivered by the latter to launder 16. When this apparatus is utilized for separating the sands or coarser particles from crushed ore products, then the water and slimes or minute particles of solids separated from the sands by the dewatering apparatus 6, will be conveyed by the drainage pipe 17 to the pump 18 and lifted by the latter through pipe 18^a to the launder 16, which would serve to conduct them to the slimes plant for further treatment. It will be evident that the launder 16 may be arranged in such a position in relation to the dewatering apparatus that the water and slimes separated thereby from the sands may gravitate into it either with or without the assistance of a vacuum or of pressure in the apparatus.

In the figures the pipe line 7 and the launder 16 serve for supplying the mixture

to, and receiving the separated liquid from, the dewatering apparatus 6 for both rows of tanks 1.

Referring to the modified form of the invention illustrated in Figs. 3 and 4, 19 represent the tanks shown arranged in the form of a circle. In this case the bridge or frame 20 is pivotally supported at one end on a suitable stationary support 21 located at the center of the arrangement of tanks 19 and equipped with wheels at the other end for traversing a circular track 22 supported by trestles 22^a provided round the tanks. This bridge or frame 20 carries the dewatering apparatus 23 which may be constructed and arranged as described in connection with Figs. 1 and 2. The frame 20 is also shown carrying a distributor of the construction previously described. The pulp or mixture is conducted by pipe 24 to a hopper 25 carried by a frame 26 on the bridge 20 above the stationary support 21 and by pipe 25^a from hopper 25 to the dewatering apparatus 23. The pipe 24 is shown supported by the trestles 26^a which serve also for carrying an overhead gangway 27. The separated water or liquid conducted from the dewatering apparatus by the drain pipe 28 to the pump 29 is lifted by the latter through pipe 30 to the inclined launder 31 supported by the trestles 26^a. The feed pipe 24 for the dewatering apparatus 23 is preferably provided with a valve 31^a or its equivalent actuated from the gangway 27 for regulating the supply to the hopper 25. It is apparent that in any position of the dewatering apparatus 23 over any one of the treatment tanks 19 the hopper 25 will always remain beneath the outlet of the feed pipe 24, and the pipe 30 always remain over and discharge into the launder 31.

What I claim as my invention and desire to protect by Letters Patent is:

1. In a dewatering plant such as described, in combination, a plurality of vessels and a transportable dewatering device adapted to discharge the dewatered product into any one of said vessels.

2. In a dewatering plant such as described, in combination, a plurality of vessels, a carriage, and a dewatering device movable with said carriage adapted to discharge the dewatered product into any one of said vessels.

3. In a dewatering plant such as described, in combination, a plurality of vessels, a carriage, a dewatering device transportable with said carriage and adapted to discharge the dewatered product into any one of said vessels, means for conveying to the dewatering device the mixture to be dewatered, and means for removing the separated liquid from the dewatering device.

4. In a dewatering plant such as described, in combination, a plurality of vessels, a carriage, a dewatering device movable with

said carriage and adapted to discharge the dewatered product into any one of said vessels, means for conveying the mixture to the dewatering device when the latter is in position to discharge the dewatered product into any one of said vessels, and means for removing the separated liquid from the dewatering device.

5. In a dewatering plant such as described, in combination, a plurality of vessels, a carriage, a dewatering device movable with said carriage and adapted to discharge the dewatered product into any one of said vessels, means for conveying the mixture to the dewatering device when the latter is in position to discharge the dewatered product into any one of said vessels, means for regulating said supply, and means for removing the separated liquid from the dewatering device.

6. In a dewatering plant such as described, in combination, a plurality of vessels, a carriage, a dewatering device movable with said carriage and adapted to discharge the dewatered product into any one of said vessels, means for conveying the mixture to the dewatering device when the latter is in position to discharge the dewatered product into any one of said vessels, means for regulating said supply, means for removing the separated liquid from the dewatering apparatus, and means movable with the carriage for distributing the dewatered product in the vessels.

7. In a dewatering plant such as described, in combination, a plurality of treatment vessels, a track, a carriage adapted to traverse said track, and a dewatering device upon said carriage.

8. In a dewatering plant such as described, in combination, a plurality of treatment vessels, a track, a carriage adapted to traverse said track, a dewatering device upon said carriage, means for conveying the mixture to the dewatering device, and means for removing the separated liquid.

9. In a dewatering plant such as described, in combination, a plurality of treatment vessels, a track, a carriage adapted to traverse said track, a dewatering device upon said carriage, means for conveying the mixture to the dewatering device, means for removing the separated liquid, and means mounted upon the carriage for distributing the dewatered product inside the vessel.

10. In a dewatering plant such as described, in combination, a plurality of treatment vessels, a track, a carriage adapted to traverse said track, a dewatering device upon said carriage, means for conveying the mixture to the dewatering device said means comprising a pipe and a branch pipe for each vessel, and means for removing the separated liquid.

11. In a dewatering plant such as de-

scribed, in combination, a plurality of treatment vessels, a track, a carriage adapted to traverse said track, a dewatering device upon said carriage, means for conveying the mixture to the dewatering device, said means comprising a pipe having a branch pipe for each vessel, and a valve for each branch pipe for regulating the supply of the mixture to the dewatering apparatus.

12. In a dewatering plant such as described, in combination, a plurality of treatment vessels, a track, a carriage adapted to traverse said track, a dewatering device upon said carriage, means for conveying the mixture to the dewatering device, and means for removing the separated liquid, said latter means comprising suction and delivery pipes and a pump.

13. In a dewatering plant such as described, in combination, a plurality of treatment vessels, a track, a carriage adapted to traverse said track, a dewatering device upon said carriage, means for conveying the mixture to the dewatering device said means comprising a pipe having a branch pipe for each vessel, and means for removing the separated liquid, said latter means comprising suction and delivery pipes and a pump.

14. In a dewatering plant such as described, in combination, a plurality of treatment vessels, a track, a carriage adapted to traverse said track, a dewatering device upon said carriage, means for conveying the mixture to the dewatering device, said means comprising a pipe having a branch pipe for each vessel, means for removing the separated liquid, and means mounted upon the carriage for distributing the dewatered product inside the vessels.

15. In a dewatering plant such as described, in combination, a plurality of treatment vessels, a track, a carriage adapted to traverse said track, a dewatering device upon said carriage, means for conveying the mixture to the dewatering apparatus, said means comprising a pipe having a branch pipe for each vessel, a valve for each branch pipe for regulating the supply of the mixture to the dewatering device, and means mounted upon the carriage for distributing the dewatered product inside the vessels.

16. In a dewatering plant such as described, in combination, a plurality of treatment vessels, a track, a carriage adapted to traverse said track, a dewatering device upon said carriage, means for conveying the mixture to the dewatering device, means for removing the separated liquid, said latter means comprising suction and delivery pipes and a pump, and means mounted upon the carriage for distributing the dewatered product inside the vessels.

17. In a dewatering plant such as described, in combination, a plurality of treatment vessels, a track, a carriage adapted to

traverse said track, a dewatering device upon said carriage, means for conveying the mixture to the dewatering device, said means comprising a pipe having a branch pipe for each vessel, means for removing the separated liquid, said latter means comprising suction and delivery pipes and a pump, and means mounted upon the carriage for distributing the dewatered product inside the treatment vessels.

18. In a dewatering plant such as described, in combination, two parallel rows of treatment vessels, a separate track for each row of vessels, a carriage for each track, a dewatering device mounted upon each carriage, means for conveying the mixture to be dewatered to the dewatering devices comprising a pipe located above and between the tracks and a branch pipe for each vessel, means for removing the separated liquid from the dewatering devices, and a launder located between and above the tracks for receiving the separated liquid from both dewatering devices.

19. In a dewatering plant such as described, in combination, two parallel rows of treatment vessels, a separate track for each row of vessels, a carriage for each track and movable over the vessels, a dewatering device mounted on each carriage, regulatable means for conveying the mixture to be dewatered to the dewatering devices comprising a pipe located above and between the tracks and a branch pipe and valve for each vessel, means for removing the separated

liquid from the dewatering devices, and a launder located beneath the aforementioned pipe for receiving the separated liquid from both dewatering devices, and means mounted upon each carriage for distributing the dewatered product inside the vessels.

20. In a dewatering plant such as described, in combination, two parallel rows of treatment vessels, a separate track for each row of vessels, a carriage for each track and movable over the vessels, a dewatering device mounted on each carriage, regulatable means for conveying the mixture to be dewatered to the dewatering devices comprising a pipe located above and between the tracks and a branch pipe and valve for each vessel, means for removing the separated liquid from the dewatering devices, and a launder located beneath the first mentioned pipe for receiving the separated liquid from both dewatering devices, and means mounted upon each carriage for distributing the dewatered product inside the vessels, said latter means comprising a rotatable plate and its driving shaft, belt and motor, and a chute for conducting the dewatered product from the dewatering device on to the rotatable plate.

In witness whereof I have hereunto set my hand in the presence of two subscribing witnesses.

HANS CHARLES BEHR.

Witnesses:

CHAS. OVENDALE,
R. OVENDALE.