W. F. DEISTER.

MECHANISM FOR OPERATING CONCENTRATING UNITS.

APPLICATION FILED JULY 30, 1913.

1,088,684.

Patented Mar. 3, 1914.

3 SHEETS—SHEET 1.

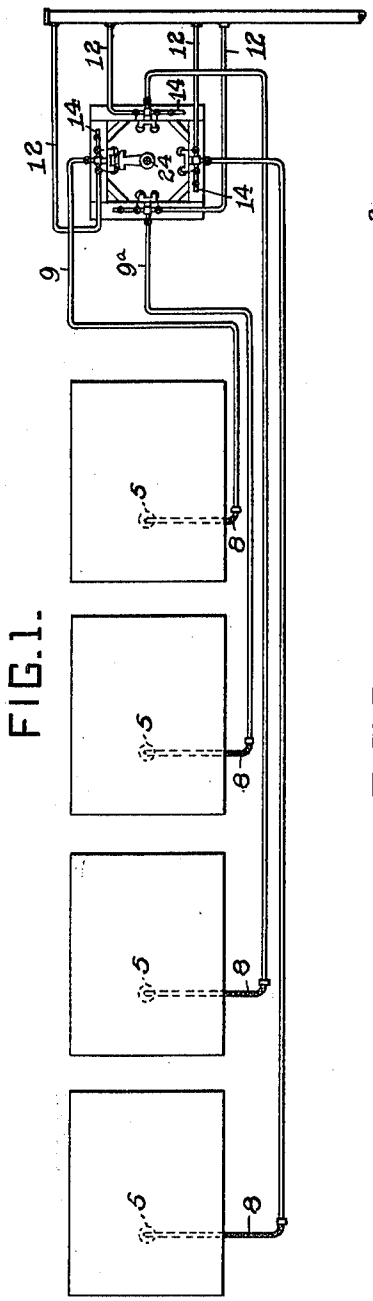


FIG. 1.

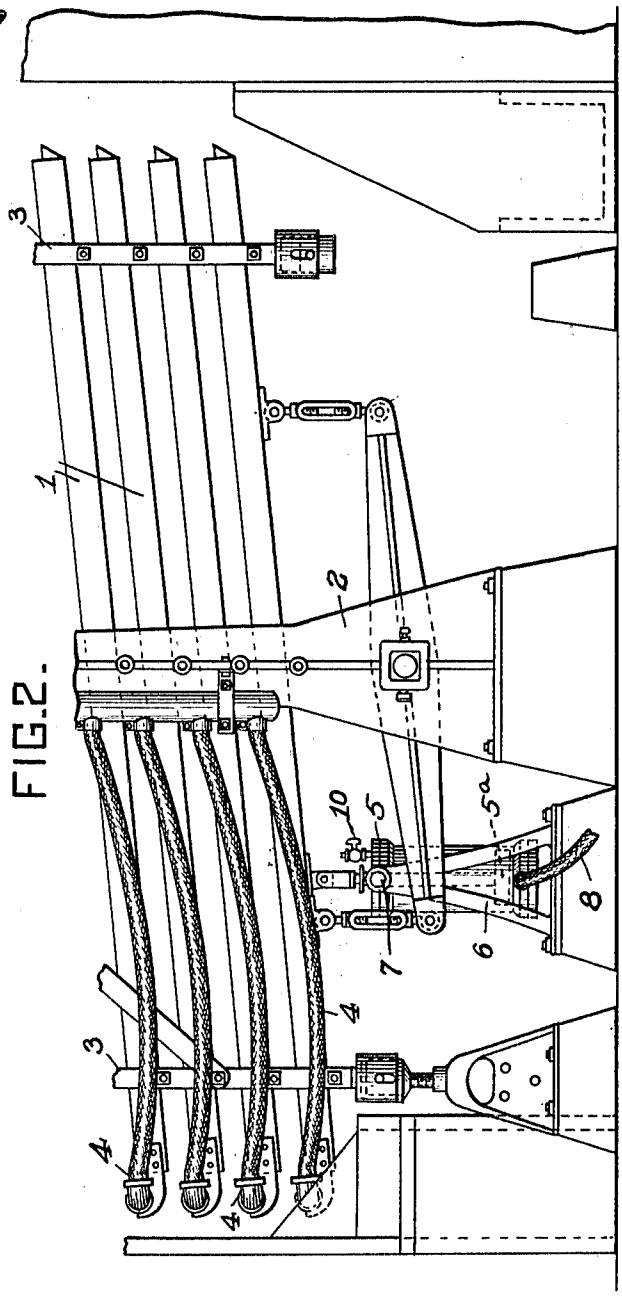


FIG. 2.

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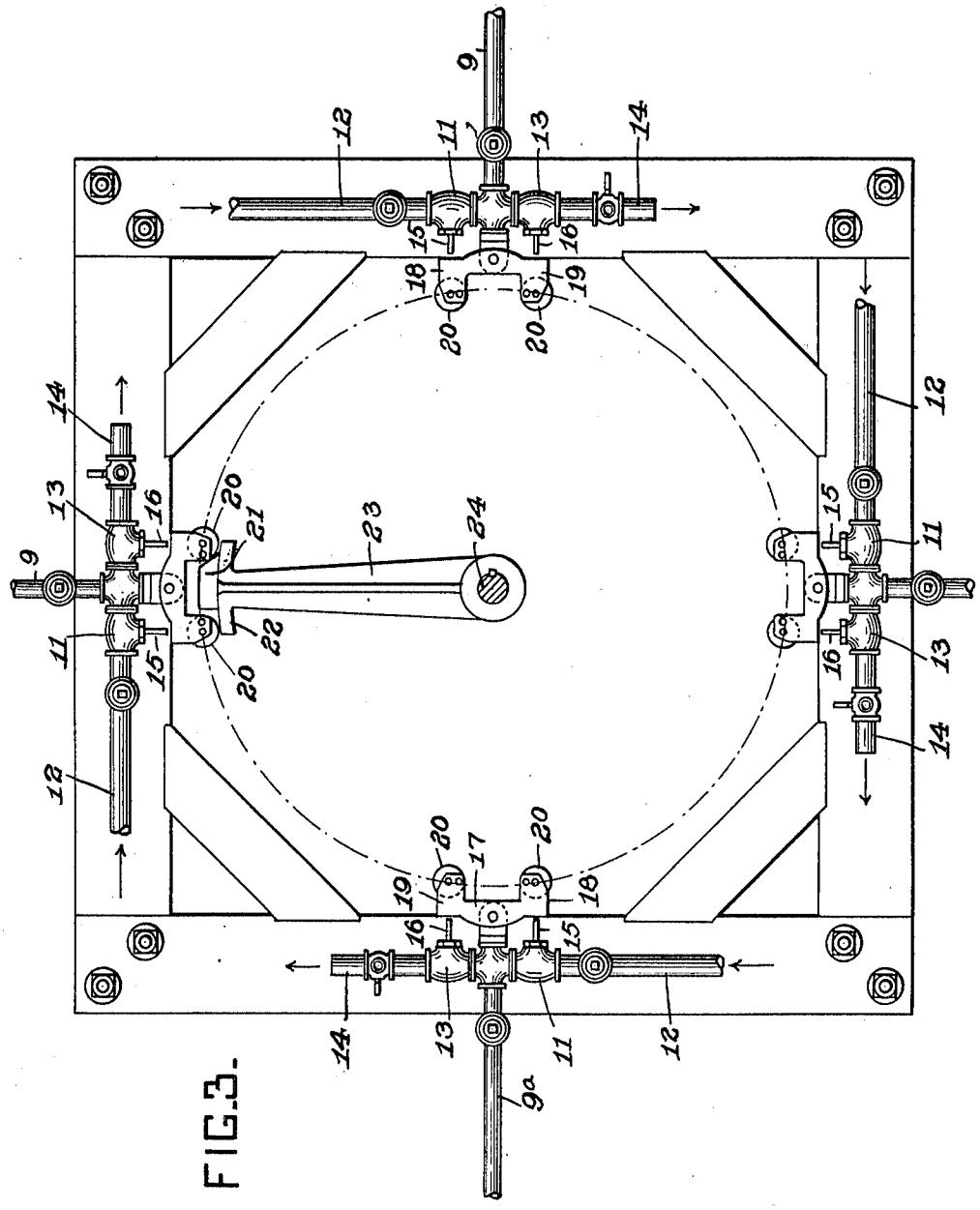


FIG.3.

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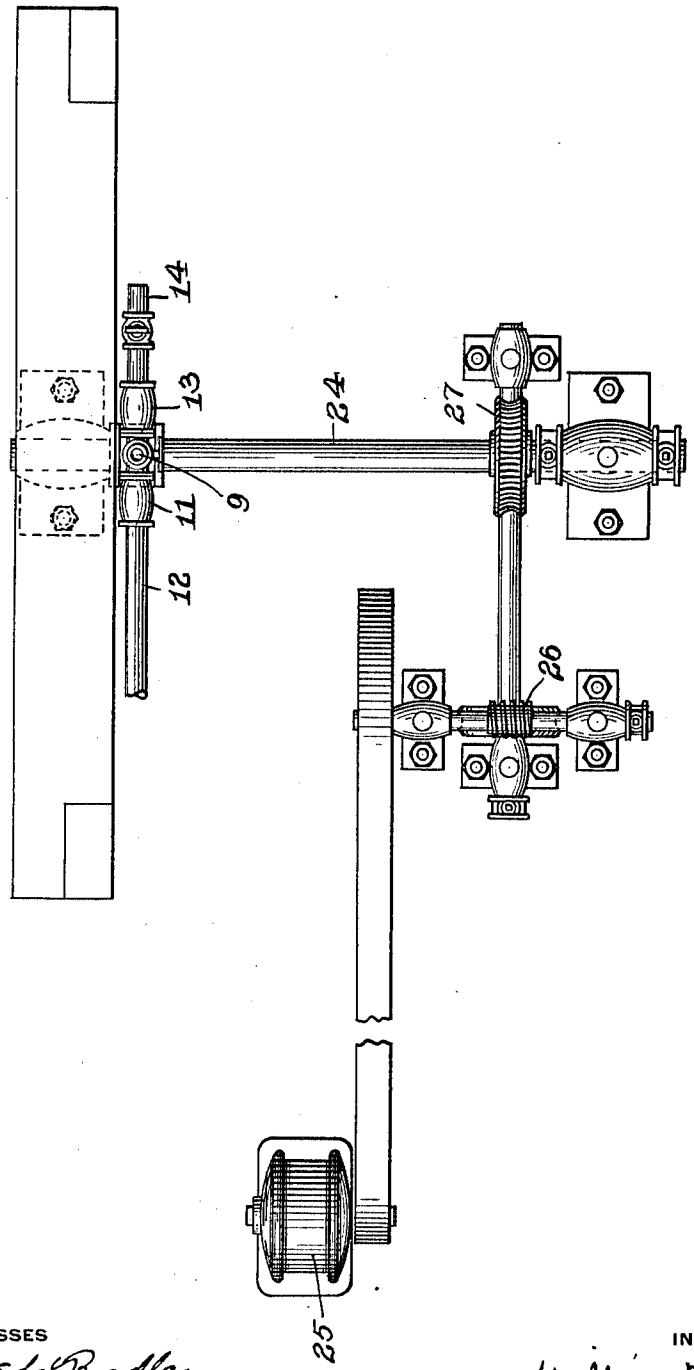
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3 SHEETS—SHEET 3.

FIG. 4.



WITNESSES

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UNITED STATES PATENT OFFICE.

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MECHANISM FOR OPERATING CONCENTRATING UNITS.

1,088,684. Specification of Letters Patent. Patented Mar. 3, 1914.

Application filed July 30, 1913. Serial No. 782,085.

To all whom it may concern:

Be it known that I, WILLIAM F. DEISTER, residing at Fort Wayne, in the county of Allen and State of Indiana, a citizen of the United States, have invented or discovered certain new and useful Improvements in Mechanism for Operating Concentrating Units, of which improvements the following is a specification.

Letters Patent Nos. 1,007,074 and 1,007,075, dated October 31st, 1911, show, describe and claim apparatus for treating concentrates, said apparatus consisting generally stated in a series of superposed independently pivoted decks, over which when inclined in one direction the material to be treated is allowed to slowly flow in a thin stream for a suitable period. The inclination of the decks is then reversed and water allowed to flow with considerable rapidity from the elevated ends down along the surfaces to wash off the minerals or values, which lodged on such surfaces during the feed period. It is then generally the practice to arrange a series of these apparatuses in batteries, and to shift the decks from one position to another in succession.

The invention described herein has for its object the automatic successive operation of the apparatuses forming a battery.

The invention is hereinafter more fully described and claimed.

In the accompanying drawings forming a part of this specification, Figure 1 is a diagrammatic view showing a series of concentrating apparatus arranged in battery and the controlling mechanism; Fig. 2 is a side elevation of a single unit and the fluid pressure mechanism for shifting the decks; Fig. 3 is a front elevation of the mechanism for controlling the flow of fluid pressure to and from the several fluid pressure mechanisms operating the apparatus, and Fig. 4 is a plan view of the controlling apparatus.

Each concentrating apparatus as set forth in the patents referred to consists of a series of decks 1, independently supported in pivotal shafts carried by standards 2, and so connected together by straps 3 as to move in unison on their pivotal supports. Provision is made as described and shown in the patents referred to to feed the material to be treated, as for example, slime, onto their high ends when the decks are inclined as shown in Fig. 2. Provision is also made as by perforated pipes 4 for discharging water onto the opposite ends of the decks, when their inclination has been reversed. The flow of slime and water is automatically controlled by the decks when being shifted from one inclination to the other.

It is preferred as set forth in the patents that the decks should be so pivotally supported that when free to move they will automatically assume feed position as shown in Fig. 2, but they may be positively shifted to both positions. In the construction shown a fluid pressure cylinder 5 is supported on a frame arranged below the decks and at one side of the pivotal points of the latter. The piston 5^a of the cylinder is connected to the underside of the lower deck. As the decks move in the arc of a circle, the cylinder 5 is provided with trunnions 7 which rest on suitable bearings in the frame 6.

A short section 8 of flexible tubing connects the lower ends of the cylinders of the respective apparatus in the battery to lines of pipe 9, 9^a, etc., extending to the controlling apparatus, which may be arranged at any desired place. As in the construction shown herein the decks are moved positively only from feeding to washing position and hence fluid pressure is admitted to and allowed to escape from only one end of the cylinder, provision is made as by a pet cock 10 for the flow of air into and out of the opposite end of the cylinder.

As shown in Fig. 1, the lines of pipe lead to independent valve mechanisms in the controller. Each valve mechanism consists of an inlet valve 11 connected to a supply pipe 12 and to a pipe 9 leading to the fluid pressure cylinder, and an outlet valve 13 connected to pipe 9 and preferably to an escape pipe 14. The stems 15 and 16 of the inlet and outlet valves are adapted to be shifted to open said valves by a lever 17, which is provided on opposite sides of its pivotal point with lugs 18 and 19 preferably carrying rollers 20. The lever 17 is shifted first in one direction and then in the other to open said valves in succession by a cam projection 21 on a movable head 22.

As before stated the number of valve mechanisms in the controller will correspond to the number of concentrating apparatus in the battery. The valve mechanism may be arranged in any desired manner and head 22

caused to move from valve mechanism to valve mechanism by a suitable means. It is preferred however that the head should be carried by an arm 23 keyed to a shaft 24 and the valve mechanisms at suitable intervals around said shaft. The shaft may be rotated in any suitable manner, as by an electric motor 25. As such motors are most efficient at high speeds and as the arm 23 should move comparatively slowly, motion is transmitted from the motor to the shaft by a plurality of worm gearings 26 and 27 as shown in Fig. 4.

The time elapsing between the shifting of successive apparatus from feed to washing position will be dependent on the distance between successive valve mechanisms and the rate of movement of the valve shifting head 22. But the interval between the movement of the decks of each apparatus to washing position and their return to feed position or in other words the duration of the washing operation, is dependent on the distance between the lugs 18 and 19 on the levers and the rate of movement of the head 22. As shown in Fig. 3, the positions of the rollers on the lugs 18 and 19 may be changed to vary the interval between feeding and washing operations.

I claim herein as my invention:

1. In a concentrating plant, the combination of a plurality of concentrating apparatus, each consisting of pivotally mounted decks, a fluid pressure cylinder for each apparatus, a plurality of valve mechanisms each connected to a cylinder and adapted to control the flow of fluid pressure to and from said cylinder and a movable head for operating said valve mechanisms in succession.

2. In a concentrating plant, the combination of a plurality of concentrating apparatus, each consisting of pivotally mounted decks, a fluid pressure cylinder for each apparatus, a plurality of valve mechanisms, each connected to a cylinder, a head movable into operative relation to said mechanisms successively the spacing of the mechanisms and the movement of the head being dependent on the desired duration of the feeding operation.

3. In a concentrating plant, the combination of a plurality of concentrating apparatus, each consisting of pivotally mounted decks, a fluid pressure cylinder for each apparatus, a plurality of valve mechanisms each connected to a cylinder and each consisting of spaced valves for controlling the flow of fluid pressure to and from a cylinder, means for operating the valves of each mechanism independently, a head for shifting the valve operating means, and movable along the line of valve mechanisms, the movement of the head and the spacing of the valve operating means for each mechanism being dependent on the desired duration of the washing operation.

4. In a concentrating plant, the combination of a plurality of concentrating apparatus, each consisting of pivotally mounted decks, a fluid pressure cylinder for each apparatus, a plurality of valve mechanisms each connected to a cylinder and adapted to control the flow of fluid pressure to and from its cylinder, said mechanisms being arranged at suitable intervals around a central point, a movable head, and means for moving said head around the central point to operative relation to said valve mechanisms successively.

In testimony whereof, I have hereunto set my hand.

WILLIAM F. DEISTER.

Witnesses:

CLARENCE LOUIS ALTER,

HELENA MARIE EMMETT.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."