Dec. 18, 1951 R. DRELON 2,579,110

ORE CONCENTRATOR

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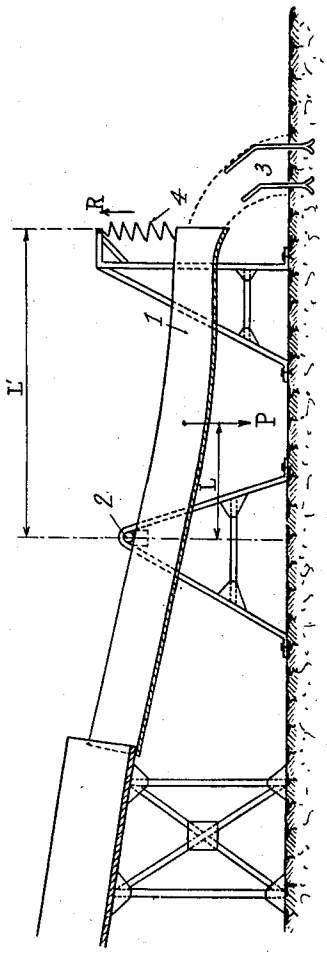

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ORE CONCENTRATOR

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Gravimetric classifying apparatus for matter vehiculated by a flow of fluid are known and established. Apparatus of this type was essentially characterized by the fact that it was constituted by an open draining channel, the lateral sides of which converge in unison while the bottom is lowered from up-stream to down stream according to a cylindrical surface the directrix of which is substantially parabolic. In this manner is formed, with respect to the fluid flow, a vertical slit originating a lamellar jet or stream. In this jet, the vehiculated matter is classified according to its specific weight so that, by means of cutters arranged within this jet, it is possible to intercept and collect separately the various sheets formed by matter classified in this manner.

The present invention has for its object an improvement brought in the realization of the gravimetric classifying apparatus hereinabove mentioned.

This improvement aims to realize the automatic control of these devices, when the specific weight of the raw material to be classed varies. In order to obtain this result, according to the improvement, object of the present invention, the classifying channel, which originates the free jet, and the cutters which select in the latter the various layers of products, are arranged so that their relative positions can be submitted to variations depending on those of the weight of this channel under load; these variations in weight correspond naturally to those of the products to be classified. These relative variations in position have therefore for result to move the jet with respect to the separating cutters, so that the latter are able to intercept layers of different depths in this jet.

On the appended schematic drawing and given only as an example, is illustrated one form of embodiment of the improvement object of the invention, it being understood that, in this particular case, the channel moves with respect to the fixed cutters. In the arrangement shown, the classifying channel 1 is mounted on a spindle 2 so as to be able to oscillate longitudinally in the same manner as the beam of a scale; this channel 1 being, on the other hand, submitted to an opposite force R which tends to bring it to a balanced position and to hold it there.

Due to this arrangement, any overload or any unloading which disturbs this balance of the channel 1 causes the latter to occupy a new position with respect to the separating cutters 3. If, for instance, the jet goes down with respect

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to the latter, it is evident that the lower layer of products separated by the first cutter will have more importance and inversely.

It is to be understood that the pivoting axle 2 could be placed under the channel 1 and use, in order to create the opposed force R, any appropriate mechanical means: counterpoise, compression, spring, etc. acting directly or through the medium of an appropriate mechanical system.

The change of the weight P of the channel 1 could be used to modify the positions of the separating cutters 3 with respect to the latter and to the lamellar jet which it pours. The result obtained would of course be the same; these two movements could, however, be combined. The system illustrated uses a lever of the third type, in which the variable power P is represented by the opposed resistance R by the hanging spring 4. Other realizations could be obtained by utilizing levers of the first and second type; the resistance R which constitutes the spring 4 (or equivalent means) being variable itself. As a modification, the positions either of the pivoting axes 2, or, of the application point of the opposed force R could be modified depending on the change in weight of the weight P of the channel, this being the same as changing the relative lengths of the lever arms L—L' of this oscillating system.

What I claim is:

1. In a gravity concentrator having a chute with a discharge end defining a vertical slot and having a base sloping downwardly toward said discharge end and a plurality of parallel partitions disposed at the discharge end of the chute in the path of the effluent from said chute, pivot supporting means for said chute disposed at a point beyond the longitudinal center of said chute in the upstream direction and adapted to permit vertical angular displacement of said chute, suspension means adjacent one end of the chute adapted to exert a variable vertical force to oppose variations in weight of the material in the chute, whereby said material effects controlled vertical displacement of said chute relative to said partitions.

2. In a gravity concentrator having a chute with a discharge end defining a vertical slot and having a base sloping downwardly toward said discharge end and a plurality of parallel partitions disposed at the discharge end of the chute in the path of the effluent from said chute, pivot supporting means for said chute disposed at a point beyond the longitudinal center of said

chute in the upstream direction and adapted to permit vertical angular displacement of said chute, a traction spring disposed between the discharge end of said chute and the said pivot supporting means to exert a variable vertical force to oppose variations in weight of the material in the chute, whereby said material effects controlled vertical displacement of said chute relative to said partitions.

3. In a gravity concentrator having a chute with a discharge end defining a vertical slot and having a base sloping downwardly toward said discharge end and a plurality of parallel partitions disposed at the discharge end of the chute in the path of the effluent from said chute, pivot supporting means for said chute disposed at a point beyond the longitudinal center of said chute in the upstream direction and adapted to permit vertical angular displacement of said chute, a traction spring positioned adjacent one end of the chute to exert a variable vertical force to oppose variations in weight of the material in the chute, whereby said material effects controlled vertical displacement of said chute relative to said partitions.

4. In a gravity concentrator having a chute with a discharge end defining a vertical slot and having a base sloping downwardly toward said discharge end and a plurality of parallel partitions disposed at the discharge end of the chute in the path of the effluent from said chute, pivot supporting means for said chute disposed at a point beyond the longitudinal center of said chute in the upstream direction and adapted to permit vertical angular displacement of said chute, suspension means disposed between the discharge end of the chute and the said supporting means adapted to exert a variable vertical force to oppose variations in weight of the material in the chute, whereby said material effects controlled vertical displacement of said chute relative to said partitions.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
650,138	Smith	May 22, 1900
657,393	Buss	Sept. 4, 1900
1,010,350	Deister	Nov. 28, 1911
1,995,433	Nelson	Mar. 26, 1935
2,184,226	Opie	Dec. 19, 1939