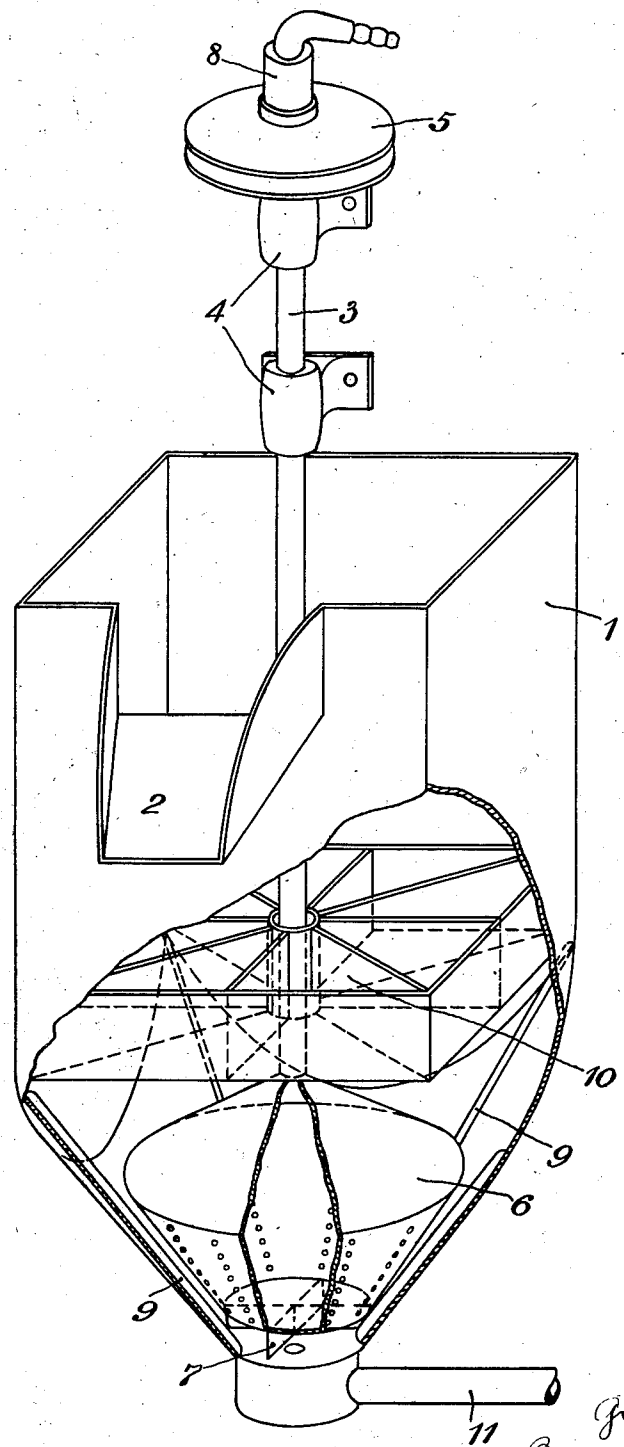
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FROTH FLOTATION DEVICE

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FROTH FLOTATION DEVICE

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1 Claim. (Cl. 261—93)

The present invention refers to a froth flotation device provided with a rapidly rotating air distributing box and, opening into same, a hollow shaft for air admission.

By means of present invention it will be possible to enrich ores in a specially favourable way, the distribution of air required being done in a most rational manner, without risking production of whirls and large bubbles in the pulp. Thus may be prevented the gushing of froth on the surface of the float device, which of course would reduce the yield. The air is minutely distributed in the pulp. The very close mixture of air and pulp accomplished in that way, has a most remarkable effect on the yield. On the other hand, the concentration thus obtained is endowed with extraordinary purity, because the ore particles are not mechanically swept along. This is due to the fact that the air distributing box does not act as an agitator, but nevertheless possesses the same advantages; it produces a very minute air emulsion, though no ore particles are being projected to the surface, so that merely small particles caught by air bubbles can get into the froth.

According to the present invention, the air distributing box has a truncated cone shape, its lesser diameter being located in the lower part corresponding to the tapered end of the lower tank wall. Only the tapered side wall of the air distributing box shows air outlets. Owing to the fact that air outlets are located only on that tapered, inside sloping lateral wall of the distributing box, an obstruction of same during the operation cannot take place. Facing the air outlets, there are arranged on the lower part of the likewise tapered tank, some cutters atomizing the discharged air.

Neither are a novelty, flotation cells whose lower part has a truncated cone shape. The difference between the object of this application and devices which already are known, therefore resides in the fact, that the air distributing box represents a truncated cone with tapered upper wall, and that above mentioned cutters are arranged in face of the perforated side wall of the air distributing box on the lower tapered end of the floating tank, whereas the tapered upper wall and the flat lower wall provided in the usual way with special agitating wings are not perforated. By means of combining these characteristics a new technical effect is obtained. Air is admitted on the upper part of the rotating shaft owing to a determined pressure which of course harmonizes with the hydrostatic pressure of the pulp. Escaping from the air outlets, the air enters freely into the pulp, that is to say, not by means of a porous agent, as for instance in the MacIntosh cell. Such cutters have the purpose of hindering the rotating movement of the liquid and do, by impact, minutely distribute the air.

The agitating wings on the lower wall of the air distributing box are intended to prevent the deposit of the heavy particles in the pulp.

Vertical plates having a diagonal direction may be located in a well known manner above the horizontally running air distributor so as to obviate the rotation of the liquid and to create an undisturbed zone in the upper cell part. Additional agents are to be introduced in the usual way, preferably on the lower cell part, by means of a pipe arranged for this purpose.

The attached drawing shows in perspective—as an example which nowise is meant to be a limitation—a method of constructing the device, according to the present invention:

1 is a wooden or metallic container with outlet 2. A vertical shaft 3 guided by bearings 4, carries on its upper part a pulley 5, through which the rotating movement is being transmitted. The perforated shaft is provided on its upper end with a stuffing box 8, through which compressed air is introduced. On the lower shaft end is located the truncated cone shaped air distributing box 6, which shows on its side wall eight hole ranges each of them being situated in a generatrix of the conus. On its lower wall are located the wings 7, intended to prevent deposits of larger ore particles. The cutters 9 arranged on the tapered lower end of the cell wall, impede the rotating movement of pulp, and atomize the air in the latter. The diagonal plates 10 allow the existence of an undisturbed zone on the upper part of the cell where froth may develop. The additional reagents are admitted by pipe 11.

What I claim is:—

A froth flotation device with rapidly rotating air distributing box and hollow shaft opening into same, for air admission, said box being of truncated cone shape with its smaller diameter located towards the lower part, and having on its side walls some air outlets, a tank having a lower unperforated tapered portion opposite the tapered portion of said cone, cutters on said tapered portion of the tank, and agitating wings on the cone adjacent the bottom portion of the tank.

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