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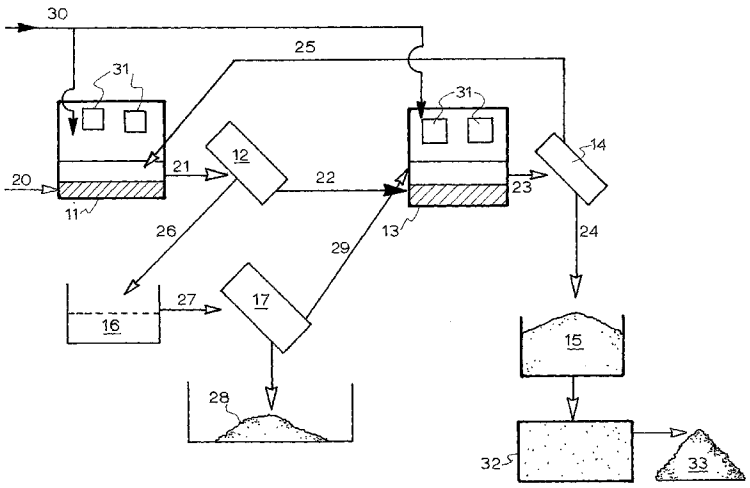
(54) Title: THE EXTRACTION AND TREATMENT OF HEAVY METALS



(57) Abstract: Contaminated waste streams or soil or sludge is subjected to a first treatment stage with an acid liquor at a pH below 2 and at a solids content from 5 to 30%; then the liquid and solid phases from the first treatment stage are separated; the solids from the first treatment stage are mixed with a fresh acid liquor at a pH below 2 and a solids content from 5 to 30%; the liquid and solid phases from the second treatment stage are separated; the liquor separated from the first treatment stage is reacted with a base to precipitate the metals; the precipitated metals are separated and the liquor is recycled for reuse in the process; the solids separated from the second treatment stage are neutralized to adjust the pH to a level acceptable for a soil conditioner or fertilizer or other customized products; and the liquor from the second stage is used as the acidic liquor in the first treatment stage . Where the sludge contains hydrogen sulfide the treatment stages are conducted in closed vessels containing a source of ozone in the head space to convert the hydrogen sulfide into a soluble sulfurous or sulfuric acid. The process has the advantage of avoiding any liquid effluent.

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