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SCRUBBER

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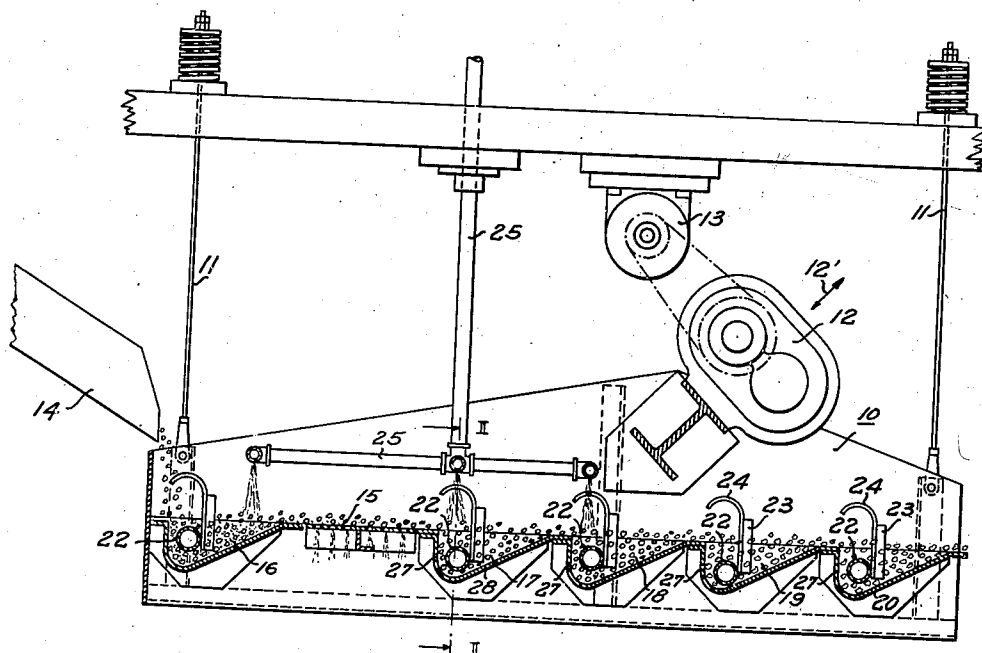


Fig. 1

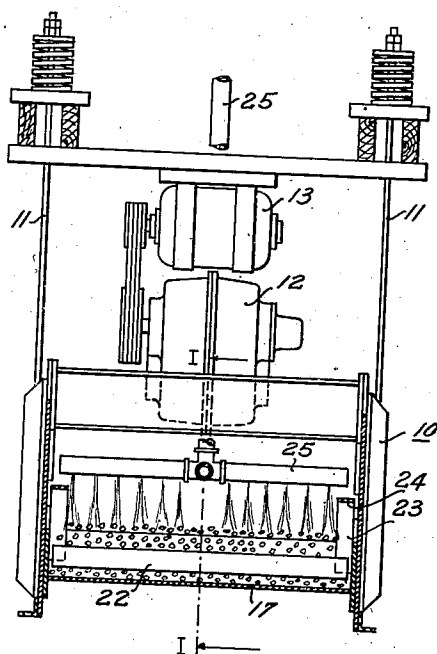


Fig. 2

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## UNITED STATES PATENT OFFICE

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## SCRUBBER

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4 Claims. (Cl. 209-6)

This invention relates to a scrubber of the vibrating type for removing adherent impurities from ore, gravel, etc.

An object of this invention is to provide a vibrating scrubber with transverse scrubbing pockets having bodies extending longitudinally of said pockets and loosely retained therein to aid in the scrubbing action within the pockets.

Other objects will become apparent from the following description taken in connection with the drawing, wherein:

Fig. 1 is a longitudinal sectional elevation of a vibrating scrubber constructed in accordance with the invention; and

Fig. 2 is a transverse sectional view taken on line II-II of Fig. 1.

The scrubber illustrated herein comprises a body or deck generally indicated at 10 suspended by cables 11 from a suitable overhead support and vibrated by a vibrating mechanism 12 driven by motor 13. While various types of vibrating mechanisms may be utilized, the mechanism 12 illustrated herein induces a straight line vibration or reciprocation of deck 10 in the direction indicated by arrows 12'. The deck carries a screen section 15 and a plurality of pockets 16, 17, 18, 19 and 20 which extend transversely of the screen from side to side thereof. Material is fed to the deck by means of chute 14 and, due to the vibration of the deck, is caused to pass longitudinally of the deck from the feed end to the discharge end. During its passage over the deck, the material being treated is screened and washed and impurities adhering to the material are removed by the scrubbing action taking place in the pockets.

It has been found that the scrubbing action in the pockets is much more thorough when longitudinal bodies, such as hollow pipes 22, are loosely retained within the pockets. These longitudinal bodies vibrate with the deck and material and are caused to rotate by friction between bodies 22 and the ore or other material being treated. The combined impact and frictional contact between the material and bodies 22, together with the changed spacial characteristics of the scrubbing pockets, greatly increases the scrubbing capacity of the scrubber.

In order to retain bodies 22 from moving toward the discharge end with the material, brackets 23 are provided on the sides of the deck 10. These brackets are preferably provided with curved portions 24 to prevent bodies 22 from being thrown upwardly out of the pockets during the operation of the scrubber. Water is con-

ducted to any desired parts of the deck by means of distributing pipes 25. Pipes 22 may have their ends plugged to prevent entry of material into the pipes.

The pockets are preferably made with substantially vertical sides 27 and inclined sides 28. It has been found that pockets of this shape are conducive to thorough scrubbing action of the material passing therethrough, particularly when the direction of vibration is generally parallel to the planes of the inclined pocket walls. Brackets 23 are so arranged as to retain bodies 22 loosely adjacent vertical walls 27, where the pockets have their greatest depth. It has been found in operation that dams, previously used to prevent flow of material across the surface of the deck and by-passing the pockets, are unnecessary when bodies 22 are utilized. This results in increasing the capacity of the scrubber. While only one pipe 22 has been shown in each pocket, it is clear that two or even more pipes may be used. Members 22 may be hollow pipes as shown or solid cylinders or any other suitable bodies, and need not be round in cross-section. They should be loosely retained within the pockets, and should take up appreciable space therein.

It is claimed and desired to secure by Letters Patent:

1. In a vibrated scrubbing deck having sides, a feed end and a discharge end, means for vibrating said deck in a plane parallel to said sides, a plurality of pockets arranged in said deck and extending from side to side thereof, said pockets comprising planar walls arranged at an acute angle to each other, longitudinal members loosely retained within said pockets and extending substantially the full length of said pockets, and means carried by said sides and extending inward therefrom for retaining said members adjacent one of said planar walls of said pockets during vibration of said deck.

2. In a vibrated scrubbing deck, means for vibrating said deck longitudinally thereof, a plurality of pockets arranged transversely of said deck, each of said pockets comprising a vertical wall depending from said deck and an inclined wall depending from said deck and connected to the lower end of said vertical wall, bodies extending substantially across the entire length of said pockets, and means for loosely retaining said bodies for vibration adjacent said vertical walls of said pockets.

3. A scrubber comprising a substantially horizontal deck, a plurality of pockets arranged transversely of said deck, said pockets compris-

ing vertical and inclined walls depending from said deck and connected at their lower portions, means for vibrating said deck rectilinearly in a direction generally parallel to said inclined walls, longitudinal bodies extending substantially the entire length of said pockets, and means for loosely retaining said bodies within said pockets adjacent the vertical walls thereof.

4. A scrubber comprising a horizontal deck, means for vibrating said deck longitudinally thereof, a plurality of imperforate pockets arranged in said deck, each of said pockets com-

prising two planar walls depending from said deck at an acute angle to each other and joined at their lower ends by a rounded bottom, a plurality of rods extending throughout substantially the full lengths of said pockets, means for loosely retaining each of said rods adjacent one of said planar walls of said pockets, said deck comprising a substantially horizontal screen section extending between at least two of said pockets and connecting the upper ends of adjacent walls of said two pockets.

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