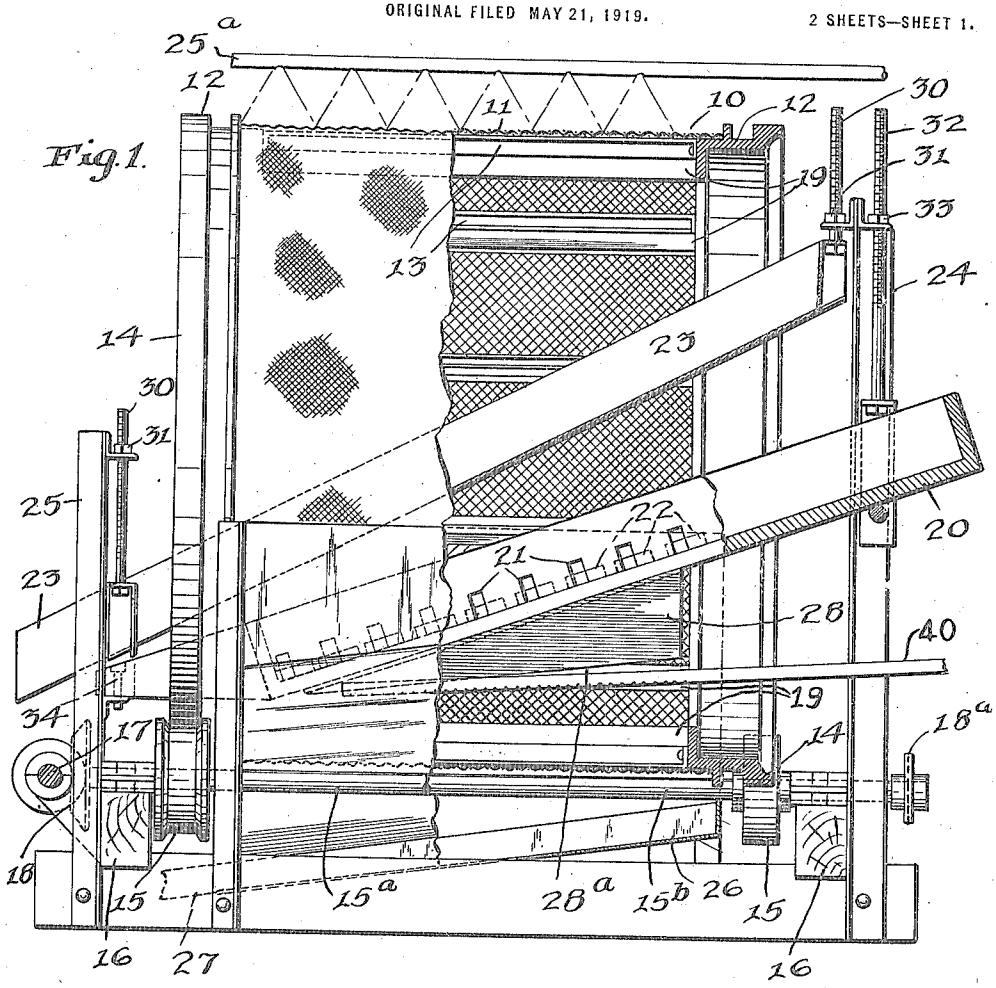
Jan. 9, 1923. 1,441,870.

H. A. MEGRAW.

SCREEN.

ORIGINAL FILED MAY 21, 1919. 2 SHEETS—SHEET 1.

Fig. 1.



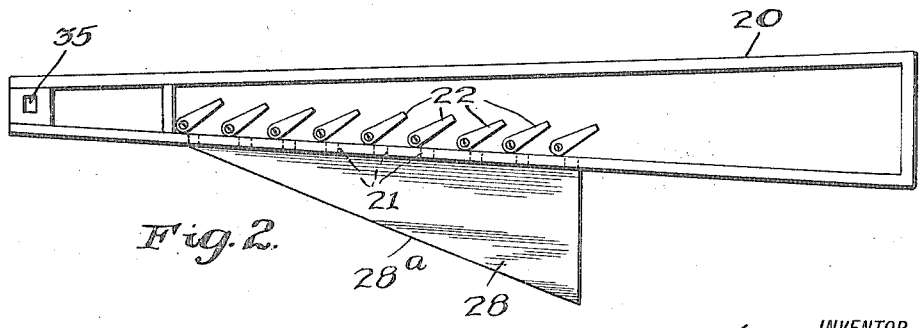


Fig. 2.

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1,441,870.

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ORIGINAL FILED MAY 21, 1919.

2 SHEETS—SHEET 2.

Fig. 4.

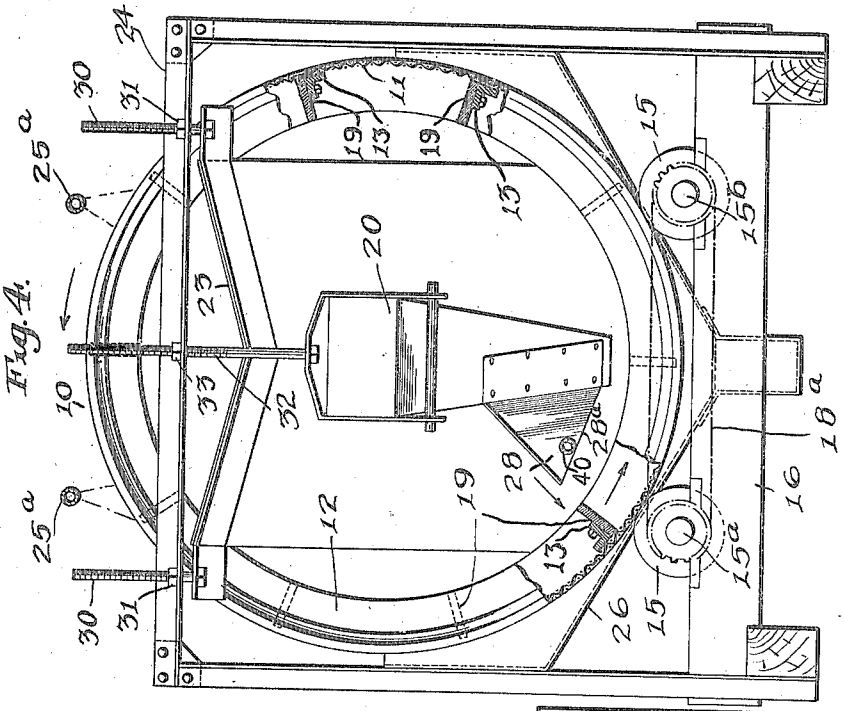
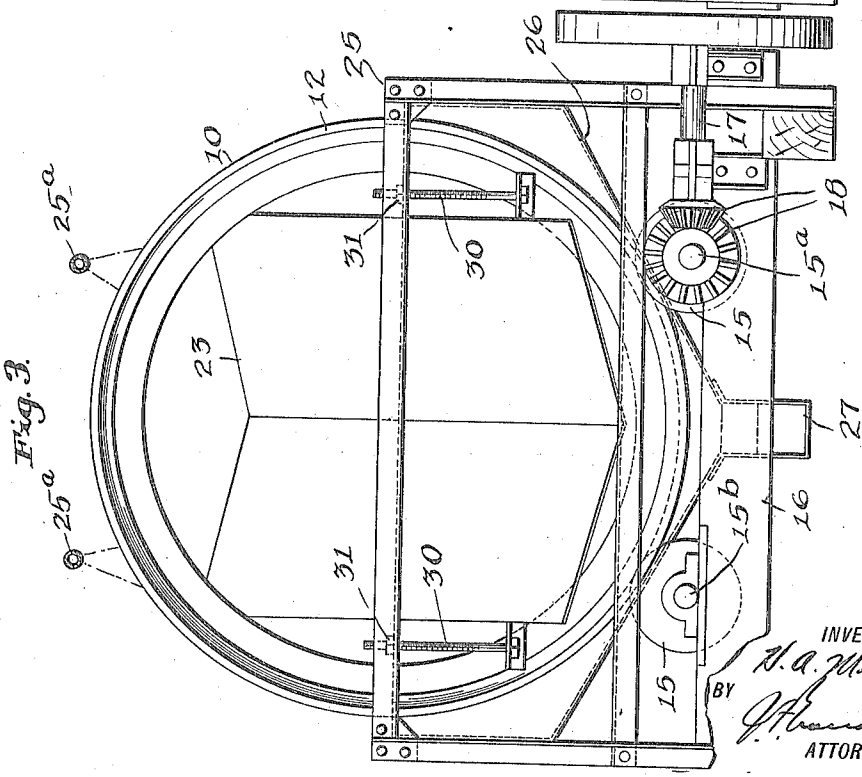


Fig. 3.



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UNITED STATES PATENT OFFICE.

HERBERT A. MEGRAW, OF NEW YORK, N. Y.

SCREEN.

Application filed May 21, 1919, Serial No. 298,728. Renewed June 9, 1922. Serial No. 567,196.

To all whom it may concern:

Be it known that I, HERBERT A. MEGRAW, a citizen of the United States, and a resident of the borough of Manhattan, in the city, county, and State of New York, have invented a new and useful Screen, of which the following is a specification.

The specification presents certain improvements upon and within the invention in screens of my Patent 1,090,933 of March 24, 1914. In that patent I disclosed a rotary, tubular, non-vibratory screen, suitable particularly for fine, wet screening, having shelves on its interior, and entry and oversize launders extending in and out at opposite ends of the screen and sloping therethrough in the same general direction, one below the other, whereby the pulp is deposited along the bottom of the tubular screen, through which the undersize passes at once, the oversize being prevented from sliding upon the fabric and being carried upward by the shelves, to be deposited into the oversize launder, where it is carried out by a flow of water. Jets are placed over the top of the screen to keep the screen openings clear, the water therefrom passing through and falling into the oversize launder. Advantages of a screen of this character are comparative absence of wear in and upon the screen fabric, freedom from blockading, saving of mill fall, and convenience in conducting the material to and from the screen.

The object in the present improved screen is further to reduce wear, increase efficiency, and avoid sticking of oversize particles in the screen meshes.

In the accompanying drawings:

Fig. 1 is a view partly in side elevation and partly in vertical longitudinal section of the screen;

Fig. 2 is a plan view of the entry or distributing launder and apron;

Fig. 3 is a front or discharge end elevation; and

Fig. 4 is an elevation of the opposite end, with a portion in section.

The sieve or screen proper 10 is of hollow cylindrical or tubular form, and is desirably constructed by supporting the screen cloth 11 on a frame or skeleton structure consisting of end ring castings 12 and connecting members 13. The screen may be of various relative proportions and is here shown as of greater height than in my prior patent, but this may be varied.

The sieve thus constructed is supported on bearings which leave both its ends and its interior unobstructed for the launders hereinafter described. Thus, the ring castings 12 are shown provided with tracks 14 which rest on grooved rollers 15 mounted on shafts 15^a, 15^b journaled in bearings resting on blocks 16, at opposite ends of the sieve. The screen may be driven from a transverse shaft 17, which is connected by bevel gears 18 with the shaft 15^a, which in turn is connected with the shaft 15^b by a sprocket chain 18^a. The sieve is supported substantially horizontal, and the pulp does not travel lengthwise over its bottom.

Interiorly the sieve has provisions for limiting the lateral sliding of the abrasive material, and for elevating the oversize material, which does not pass through the meshes of the screening medium. These provisions comprise flat shelves or inward projecting wings 19, which are shown secured to the irons 13. The spacing of these shelves and their width or depth will obviously depend upon the special conditions of each case; but in general the distance measured circumferentially between them on the screen material should be such as to reduce as much as possible the sliding and rolling of the particles. The shelves extend the full length of the sieve or substantially so, and carry up the larger particles of the pulp, which is distributed the full length of the bottom of the sieve by the entry launder.

The material is supplied to the screen, substantially equally throughout its length, by means of an entry launder or trough 20, which enters the screen at one end and extends substantially the full length thereof, in the lower part and preferably centrally of the screen. This launder leads from any suitable source of supply and is suitably pitched, according to the rate of flow desired and the consistency of the fluid mixture of ground ore and water. It is tapered and closed at its lower end and is provided with suitable means for causing the material to overflow or discharge equally at different points along its length. As shown it has a multiplicity of discharge openings 21 arranged in longitudinal series along one side and adjacent its bottom, and with these openings are associated a number of vanes 22 in the interior of the trough, the same being mounted so that they can be turned more or less and in different degrees to se-

cure the distribution desired. One such directing device is shown for each opening, but obviously fewer could be employed.

An apron sheet 28 is secured to the under side of the entry launder, from which it porjects laterally and downwardly at the side having the openings 21. The laterally sloping, projecting part of the sheet conducts the material gently and in a thin even flow to the screen fabric at or near the bottom of the screen, and is triangular in form, being widest at the rear where the launder is furthest from the bottom, and tapering toward the lower end of the launder, in order that its discharge edge 28ª may be everywhere in approximately the same proximity to the screen fabric. This apron, together with the lateral distributing outlets 21, it is to be noted, are located over the downgoing or approaching side of the valley of the screen, as determined by the direction in which the shelves face and the consequent direction of drive. This is important because the tendency of the material to flow toward the bottom of the valley coincides with the direction of screen movement, hence relative movement and wear is minimized.

A discharge launder 23 is located above the entry launder, and likewise extends the full length of the sieve. It is inclined in the same general direction as the entry launder, but preferably more steeply, and conducts the oversize material out at the end opposite to that at which the entry launder leads the material in. Its lower projecting portion may extend to any suitable distance or point of discharge. At its upper end also it preferably extends beyond the entry end of the screen, where it may be supplied with a special or additional current of water if desired, to insure the washing away of the oversize.

The launders are supported from upright frames 24, 25 outside the ends of the screen, the connections being such as to permit the height and inclination of the launders to be readily changed in accordance with conditions. To this end the oppositely projecting portions of the oversize launder 23 are suspended by screws 30, which may be elevated or lowered by nuts 31 resting on upper portions of the said frames, through which the screws pass loosely. In like manner the rear or upper end of the entry launder 20 is suspended by a screw 32 and nut 33. The lower end of this launder may rest tiltably upon a portion of the frame 25, to which it may be connected by a bolt 34, it being understood that the hole 35 in the launder through which this bolt passes is sufficiently large to permit the tilting.

In order to prevent the blockading of the screening medium by particles which are too large to pass through but large enough to become wedged in the openings, I provide means for supplying water to the top of the sieve, so as to wash such particles back into the discharge launder. Two water pipes 25ª are provided as in my prior patent, extending longitudinally over the top at opposite sides of the center, these pipes being perforated so as to deliver the water downward in jets of suitable size. The wash water falls into the discharge launder and serves or assists in carrying away the oversize material.

The undersize material is received in a vessel 26, which is located beneath the sieve and comes up far enough on the sides thereof to catch all the material that passes through the meshes of the screening medium. It preferably slopes toward the discharge end of the sieve, and is provided with a discharge spout 27, which leads to any suitable point. All of the material has a substantially direct travel to and away from the screen. The pulp enters at one end, the undersize passes through the mesh of the screen and travels directly downward and forward, and the oversize is elevated slightly and also continues in the same general direction.

Another cause of blocking of the screen openings, besides wedging, is the presence of colloidal matter or slime upon the siliceous oversize particles. In order to wash away this slime at the moment of screening, in order that the oversize may be left loose upon the meshes, I now provide a spray pipe 40 extending lengthwise within the lower part of the screen, below the entry launder, and over the screening valley. This spray means is desirably located toward the outlet side of the entry launder and beneath the apron. Its jet orifices are downwardly directed, and the streams therefrom loosen and carry away through the fabric such colloidal material as may adhere to the oversize.

What I claim as new is:

In a screen, the combination of a horizontal cylindrical screen and means for rotating the same, a longitudinally sloping entry launder in the lower part of the screen, an oversize discharge launder in the upper part of the screen, shelves extending lengthwise on the interior of the screen to limit sliding and elevate the oversize for deposit in the discharge launder, a triangular apron extending laterally and downwardly from one side of the distributing launder with its longitudinal discharge edge adjacent the downgoing side of the bottom valley of the screen, and downwardly-acting spray means below the entry launder at the side toward said apron.

HERBERT A. MEGRAW.