

P. R. STANHOPE.
ORE SCREEN.
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976,943.

Patented Nov. 29, 1910.

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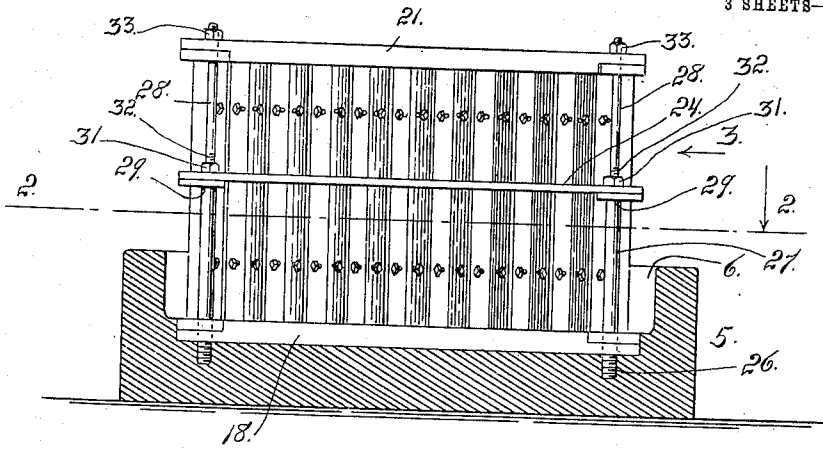
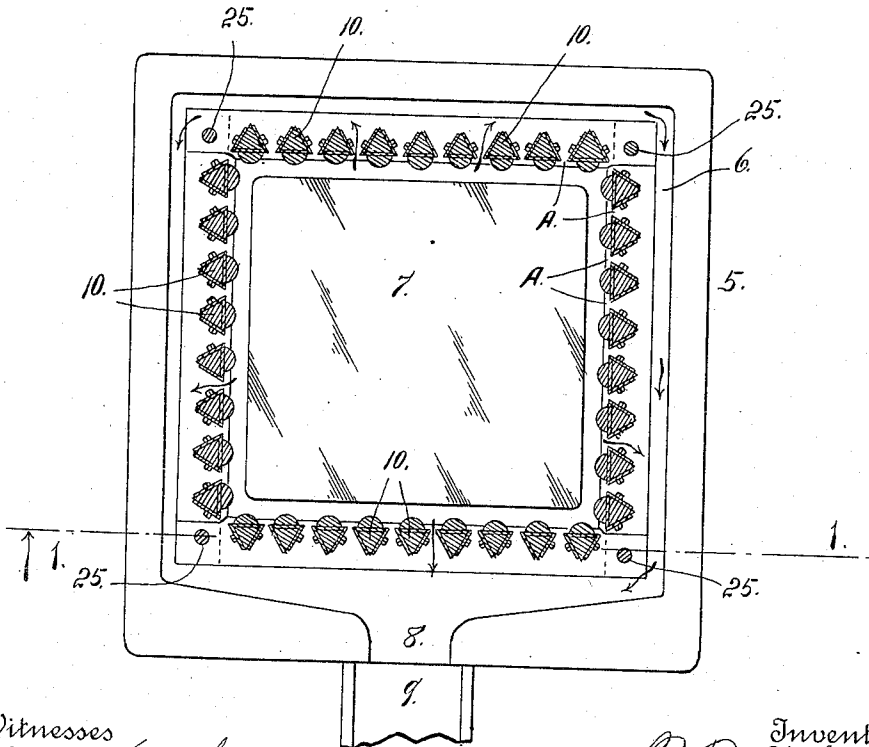


Fig. 1.



Witnesses
Otto E. Haddick.
Dena O'Neilson.

Inventor
P. R. Stanhope.
Attorney

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3 SHEETS-SHEET 3.

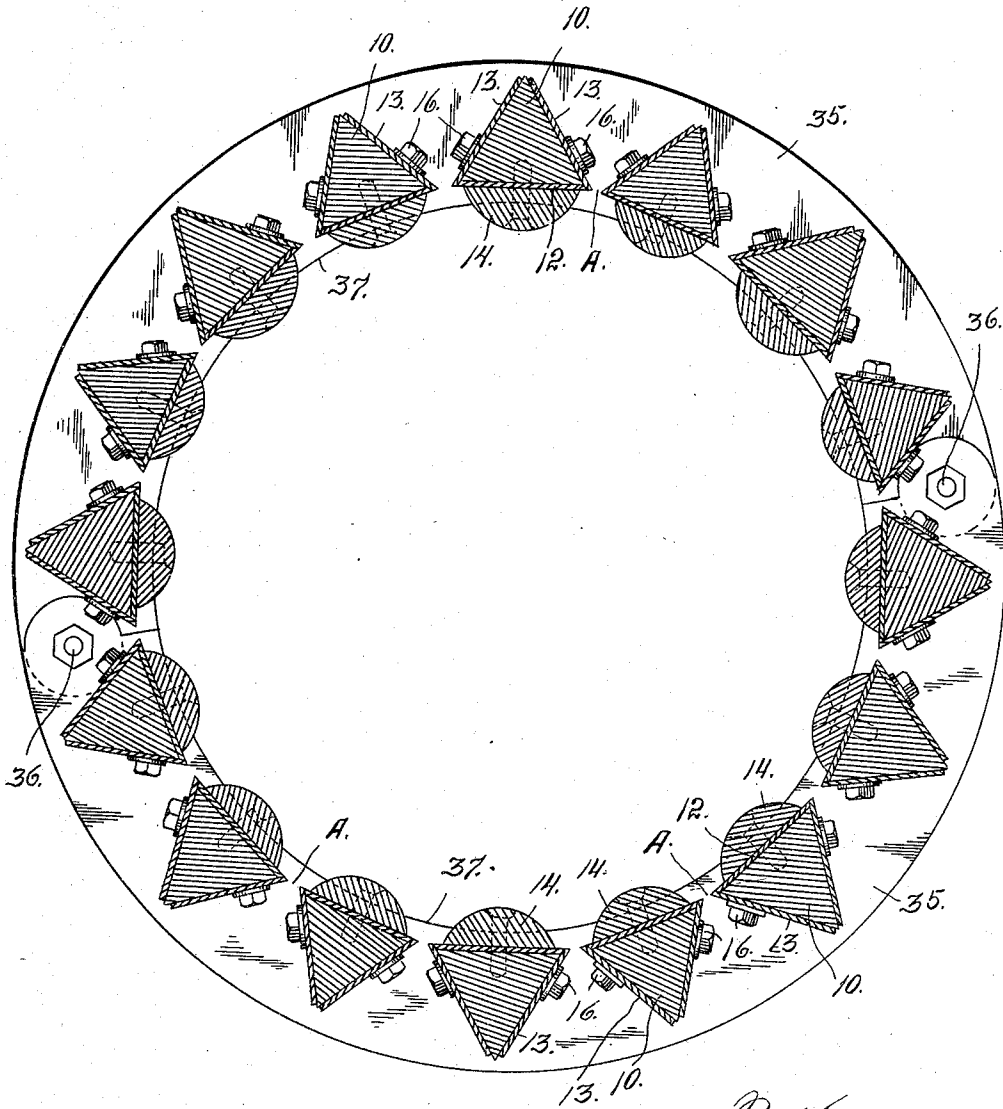


Fig. 6

Witnesses
Otto E. Horddick.
Dena Nelson.

Inventor
P. R. Stanhope.
By *A. J. D. Men* Attorney

UNITED STATES PATENT OFFICE.

PHILIP R. STANHOPE, OF DENVER, COLORADO.

ORE-SCREEN.

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To all whom it may concern:

Be it known that I, PHILIP R. STANHOPE, a citizen of the United States, residing at the city and county of Denver and State of Colorado, have invented certain new and useful Improvements in Ore-Screens; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

My invention relates to improvements in ore screens adapted for use in connection with stamp mill mortars and in all other relations where a screen of this character is needed. The screen may also be used as a grizzly or as a rotary cylindrical screen generally termed a trommel.

Having briefly outlined my improved construction, I will proceed to describe the same in detail reference being made to the accompanying drawing in which is illustrated an embodiment thereof.

In this drawing, Figure 1 is a vertical section taken on the line 1—1 Fig. 2 viewed in the direction of the arrow, the screen bars and their frame work, however, being shown in elevation. Fig. 2 is a horizontal section taken on the line 2—2 Fig. 1. In Figs. 1 and 2 the screen is shown in connection with a stamp mill mortar. Fig. 3 is an elevation looking in the direction of arrow 3 Fig. 1, the parts being shown partly in section and on a larger scale. In this view the bars forming one side of the screen are broken away both vertically and horizontally for lack of room on the sheet. Fig. 4 is a section taken on the line 4—4 Fig. 3 viewed in the direction of the arrow. Fig. 5 is a top plan view in detail showing one of the comb-shaped frame plates. Fig. 6 is a cross section taken through a screen of circular shape adapted for use either in connection with a stamp mill mortar, or as a rotary screen or trommel as may be desired.

The same reference characters indicate the same parts in all the views.

Referring first to Figs. 1 to 5 inclusive, let the numeral 5 designate a stamp mill mortar in which is located a screen of my improved construction, the same being shown square in plan view and set into the mortar leaving a space 6 surrounding the

screen and between the latter and the inner wall of the mortar. This screen surrounds the die 7 with which the stamp (not shown) comes in contact. The mortar is provided on one side with an outlet 8 whereby the pulverized material after passing through the screen, escapes into a trough or launder 9.

My improved screen as shown in the drawing consists of a series of bars 10 triangular in cross section and equipped on their three faces with plates. The inner face plate is designated 12 and the plates in the rear and on opposite sides of the bar are designated 13. To the plate 12 is applied a deflecting member 14 which as shown in the drawing has the shape in cross section of the segment of a sphere. This member is held in place by screws 15 which is passed through registering apertures formed in the member 14 and the face plate 12, and is threaded into the bar 10. The plates 13 are adjustable by means of set bolts 16 which are passed through slots 17 formed in the said plates and threaded into the bar. Originally the inner or forward edges of the plates 13, are flush with the inner surface of the face plate 12. However, as these edges of the adjustable plates, which are exposed to the action of the screened material, are worn away whereby the spaces between the bars would be enlarged, the plates 13 are moved forwardly whereby any two adjacent plates will approach each other, since the lines of their inclination if properly produced will intersect. By virtue of this fact these plates may be so regulated as to maintain uniform spaces between the screen bars. As shown in the drawing the screen bars are arranged side by side, leaving longitudinal spaces between the forward or inner edges of their adjustable plates.

As shown in Figs. 1 and 2, the screen is square in cross section or plan view, a series of the screen bars being arranged on each side. These bars are held in place by top, bottom and intermediate frame plates 21. The bottom frame plates which are four in number are designated 18 and are provided with recesses 19 formed in their upper surfaces and adapted to receive the lower extremities of the screen bars proper or the lower extremities of the bodies of the bars which fit closely therein. The four plates are cut away at their extremities as shown at 29, whereby when connected and interlocked the ends of

the two plates are of the same thickness as a single plate intermediate its extremities. In other words the extremities of the plates may be said to be halved in.

5 The top frame plates which are designated 21, are provided with recesses 22 in their lower surfaces adapted to receive the upper extremities of the bodies of the screw bars which fit closely therein. These frame
10 plates are also cut away at their extremities as shown at 23 whereby when assembled the extremities of any two adjacent plates are halved in or connected in the same manner as the lower or bottom plates.

15 The intermediate frame plates are designated 24. These plates are four in number and are comb-shaped being provided with notches 45 formed in their inner edges and adapted to receive the screen bars whose rear
20 portions are fitted thereto, whereby the bars are supported intermediate their extremities and held securely in place. As these notches 45 are of the same shape as the rear inclined surfaces of the bars, they do not interfere with the adjustment of the plates attached to the screen bars as will be readily
25 understood. There are four of the plates 24 and the adjacent plates overlap each other at the corners of the screen.

30 The top, bottom and intermediate frame plates are connected together by means of rods 25. In assembling the screen elements, the lower extremities of these rods are threaded into the bed plate of the mortar as shown at 26. The bottom frame plates 18
35 which are provided with openings 27, for the purpose, are passed downwardly over the rods 25 whose lower portions 27 are larger than their upper portions 28. Hence the openings 27 are of sufficient size to permit the plates to slide downwardly over the enlarged portions of the rods. The intermediate frame plates 24 are then dropped
40 downwardly over the rods 25 whereby two of the said plates are caused to engage the shoulders 29 formed between the parts 27 and 28 of the rods. These shoulders form a stop to prevent the further downward movement of the intermediate frame plates,
45 since the openings 30 in the extremities of these plates are too small to allow them to pass downwardly over the enlarged portions of the rods. After this is accomplished, the screen bars 10 equipped with their plates 12
50 and 13 and the deflecting member 14, are set into place, their lower extremities engaging the recesses in the lower frame plates, while the intermediate portions of the bars engage the notches of the frame plates 24. These
55 frame plates 24 are locked in place by means of nuts 31 screwed upon threaded portions 32 of the rods. After all of the screen bars are in position, the top frame plates 21 are applied to the upper extremities of the bars.

These top frame plates are provided at their
65 extremities with openings 32 adapted to receive the upper extremities of the connecting rods 28. These rods protrude above the top frame plates and are secured in place by
70 nuts 33.

It will be observed that the adjustable plates 13 of the screen bars, do not enter the recesses 22 and 19 in the top and bottom frame plates since they must be adjustable
75 as heretofore explained. Attention is called to the fact that the top and bottom frame plates are reinforced at their inner edges as shown at 34, whereby the recesses which receive the extremities of the screen bars are closed in front as well as in the rear.
80

In the form of construction shown in Fig. 6, the apparatus is of substantially the same construction as shown in the other views except that the frame bars are arranged to form a circular screen which necessitates
85 that the connecting frame plates be of corresponding shape. In Fig. 6 the lower set of frame plates only is disclosed. These are two in number and are designated 35, being connected at their extremities by rods 36.
90 The inner edges of these plates are reinforced as shown at 37 in order to close the recesses formed in the plates and adapted to receive one extremity of the series of screen bars. As heretofore explained this
95 form of construction may be used as a circular screen in connection with a stamp mill mortar, or as a rotary screen or trommel, or in any other relation where material is to be screened or sized.
100

From the foregoing description the use and operation of my improved screen will be readily understood. Assuming that the screen is installed as heretofore described, and referring more particularly to its use
105 in connection with a stamp mill mortar, the material to be treated is pulverized upon the die 7 upon which it is placed, the stamp striking the same and breaking it in the usual way, the necessary water being supplied whereby the splash of the pulp or water mixed with the pulverized ore, causes the latter when reduced to the desired mesh,
110 to pass through the spaces A between the screen bars. As the edges of the adjustable plates 13 become worn, the bolts 16 are loosened and these plates move forwardly in order to maintain the proper width of the space A in order that the material which passes through the screen may be of uniform
120 size or mesh. It will be understood that as the pulverized ore mixed with the water is splashed against the members 14 of the screen bars, the pulp will be deflected in both directions toward the spaces A between
125 the bars, thus facilitating the passage of the material through the screen, when the ore has been reduced to the desired size.

Having thus described my invention, what I claim is:

1. A screen composed of a series of triangular bars arranged in suitable proximity to each other and provided on their rear sides with plates adjustable to cause their forward line of adjustment to intersect, the forward or inner edges of adjacent plates being separated to allow the material to pass between the bars when reduced to the desired mesh, and means for holding the said parts in the assembled relation, substantially as described.

2. An ore screen composed of a series of bars having inclined rear surfaces, and plates adjustably attached to said surfaces to cause their forward line of adjustment to intersect when properly produced, the forward or inner edges of adjacent plates being spaced to determine the mesh of the screen, and means for holding the said bars in the assembled relation, substantially as described.

3. A screen composed of a series of bars, each bar having two inclined rear surfaces, the inclination of the adjacent faces of any two bars being such that the said faces approach each other as they extend inwardly, and plates adjustable to cause the forward line of adjustment of any two adjacent plates to intersect when properly produced applied to the said inclined faces of the bars,

the inner edges of the plates being spaced to determine the mesh of the screen, and means for holding the said bars in the assembled relation, substantially as described.

4. A screen composed of a series of triangular bars equipped with metal face plates, the inner plates of the bars forming the inner surface of the screen, and the rear plates adjustable to cause the forward line of adjustment of any two adjacent plates to intersect when properly produced, whereby their forward edges are spaced to determine the mesh of the screen, and means for holding said bars in the assembled relation for the purpose set forth.

5. A screen composed of bars triangular in cross section and provided with face plates, the plates applied to one face of each bar forming the inner face of the screen, deflecting members applied to the inner face plates and secured to the bars, the forward edges of the rear face plates being spaced to determine the mesh of the screen, the said plates being adjustable, and means for holding said bars in the assembled relation for the purpose set forth.

In testimony whereof I affix my signature in presence of two witnesses.

PHILIP R. STANHOPE.

Witnesses:

A. J. O'BRIEN,
DENA NELSON.