

D. C. EN EARL.
STAMP MILL SCREEN.
APPLICATION FILED JAN. 25, 1911.

1,008,804.

Patented Nov. 14, 1911.

Fig. 1.

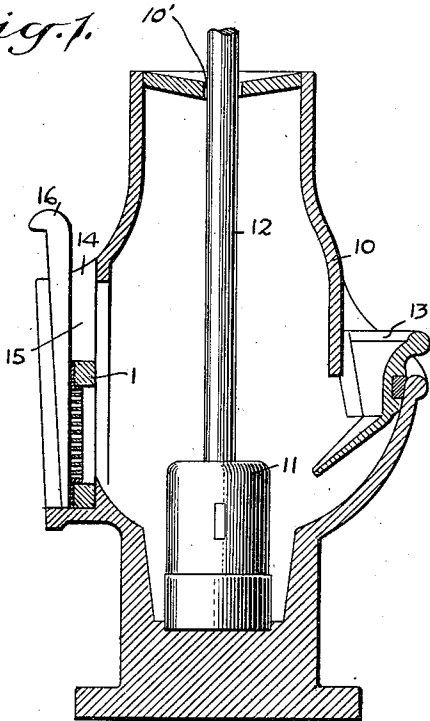


Fig. 2.

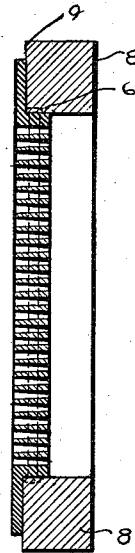


Fig. 3.

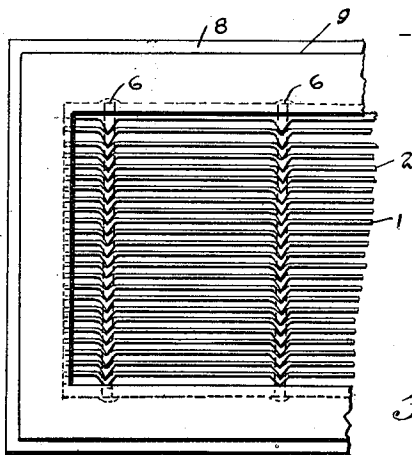


Fig. 5.

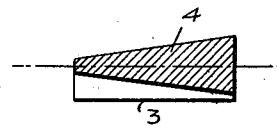
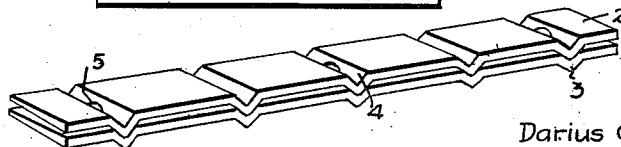


Fig. 4.



WITNESSES
Geo. W. Taylor
Wm. F. Nickel

INVENTOR
Darius C. EnEarl
BY *Myers & Co.*
ATTORNEYS

UNITED STATES PATENT OFFICE.

DARIUS COMSTOCK EN EARL, OF ROLLINSVILLE, COLORADO.

STAMP-MILL SCREEN.

1,008,804.

Specification of Letters Patent. Patented Nov. 14, 1911.

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To all whom it may concern:

Be it known that I, DARIUS C. EN EARL, a citizen of the United States, and a resident of Rollinsville, in the county of Gilpin and State of Colorado, have invented a new and Improved Stamp-Mill Screen, of which the following is a full, clear, and exact description.

My invention consists of a screen to be used in the mortar of a stamp mill employed for the wet crushing of the ores of gold and other precious metals.

It has for its object to provide a screen of greater capacity and endurance than those heretofore used, and having in addition certain novel features of construction.

It consists broadly in a number of bars arranged adjacent one another but spaced apart so as to provide openings there-through, which openings gradually increase in size to prevent the screen from becoming choked up as the crushed ore is washed therethrough.

In operation, the screen sifts the ore after it has been crushed and delivers it to the amalgamating plate or table in a sufficiently powdered condition to insure its retention by the quicksilver with which the amalgamating plate is covered.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a mortar of a stamp mill, showing the position of my screen when in place; Fig. 2 is a vertical sectional view of my milling screen, showing the bars supported by the frame thereof; Fig. 3 is a front elevation of the screen frame and the bars therein; Fig. 4 is a perspective view of the bars which make up the mesh of my milling screen, showing the manner in which these bars are held spaced apart from one another; and Fig. 5 is a transverse section of one of the bars.

Numeral 1 designates my stamp mill screen as a whole, and it consists of a number of plates or bars 2, each of which is thicker along one of its longitudinal edges than along the other longitudinal edge. These bars are arranged in a frame, as shown in Fig. 2, with their thick edges at one side or face of the frame, and their thin edges at the other side or face of the frame. In this way the openings or spaces between

the bars 2 increase in size from one face of the frame to the other. The face of the frame having the small ends of the openings I term the receiving face, and the opposite face, on which are the enlarged ends of the openings between the plates, I term the discharge face of the frame. This frame is indicated at 9. The bars are held spaced apart by means of transverse projections 3, which are formed preferably by stamping at regular intervals along the length of the bar. These projections form in effect V-shaped tongues having corresponding grooves 4 of less depth than the tongues on the opposite face of the bar 2. Through these tongues are arranged openings 5, which receive tie-rods or bolts 6. The plates and tie-rods when assembled are inclosed by a suitable casing 8, of wood or other suitable material, which contains the frame 9, the latter consisting of metal bars, angle-shaped in cross-section, arranged inside of the box or casing 8. These angle-shaped bars are not as wide as the faces of the wooden casing 8, which extends beyond the bars 9 on its inner faces and side faces. The tie-rods 6 pass through the bars 2, and are fastened to the frame 9. The frame 9, with the bars 2, can be removed from the casing 8 whenever removal is necessary.

It will be understood that in stamping the bars 2, the tongue or projection 3 must be punched somewhat farther away from the thin edge than from the thick edge, so that the ridge or edge of each tongue 3 and the bottom of each groove 4 will be parallel to a line joining the middle points of the thick and thin edges of the bar 2, as shown in Fig. 5. In this way, when the bars are arranged one upon the other, as shown in Fig. 2, they will form a straight row. The bars 2 are all made of metal, and for this purpose any metallic substance that will resist rusting and corrosion, such as nickel steel, can be employed.

The manner in which my screen is used is shown on Fig. 1, whereon 10 is the mortar of a stamp mill containing a heavy stamp 11 operated by a rod 12. 13 is an opening into which the ore to be treated is fed, and 14 is an opening through which the crushed ore is discharged. My screen 1 is arranged in the opening 14, but does not fill the same, the space above it being filled by a board or the like. This board I do not deem it necessary to show on the drawings. Both the

board and the screen are received by grooves 15, along the sides of the opening 14, and held in place by a wedge-shaped locking member 16. Water is supplied through the opening 10' in the top of the mortar. The face containing the small ends of the openings, that is to say, the receiving face of the screen, is on the inside of the crushing mill 10, and the discharge side, which contains the large ends of the openings between the bars, faces outward. When in position, the wooden face of the casing 8 of the screen gives a tight fit against the edges of the opening 14 in the mortar 10, while the outer or discharge faces of the casing 8, which is covered by the angle bars 9, affords a tight engagement to the wedge-shaped keys 16. As the stamp 11 reciprocates, it crushes the lumps of ore fed into the crushing mill through the opening 13. The water fed in at the top is splashed against the receiving face of the screen and carries the powdered ore in the form of pulp or mud against the thick edges of the bars 2. By arranging the bars with their thick edges on the inside, the wearing action of water bearing the crushed ore is resisted to a greater extent, and, as stated above, the openings becoming larger toward the outer face of the screen, the liability of the screen becoming choked up by the crushed ore is reduced to a minimum. After passing through the screen between the bars 2, the finely divided ore is delivered to the amalgamating plate or table adjacent to the opening 14, on the outside of the mortar 10, and the precious metals are retained. I do not deem it necessary to show this amalgamating plate on the drawings.

I preferably make the bars three-eighths of an inch to one-half an inch wide, and one-twentieth of an inch tapering to one-fortieth of an inch thick, but I can make them of any size if desired. The tie-rods 6 pass through openings about one-eighth of an inch in diameter, so that there is at least one-eighth of an inch of plate to be worn through before the screen becomes too impaired for use.

The ordinary size of my screen will be about twelve inches by fifty-two inches on the outside of the casing, and about seven and one-half by forty-seven and one-half inches on the inside, making the face of the casing 8 about two and one-half inches wide. The grooves may be arranged about one-half an inch apart, and the width of the openings is such that about nine of the bars or plates can be used to the half inch, making two hundred and sixteen meshes or bars to the foot. By means of a screen so constructed, the wear is greatly reduced, and at the same time the capacity of the screen is greatly increased.

Obviously, changes in the shape and size of the parts within the scope of my inven-

tion may be made when desired, it being understood that the main features of my invention comprise bars having their receiving ends especially designed to resist wear, and having the openings therebetween of such shape as to obviate the liability of the screen becoming choked, and being used in such number as to give the working capacity required.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. An article of manufacture for a stamp mill screen, consisting of a bar or plate having flat sides and having tongues projecting from the flat surface of one of said sides, said tongues being transversely arranged with respect to said flat sides.

2. An article of manufacture for a stamp mill screen, consisting of a bar or plate, said bar or plate having tongues and grooves on the flat sides thereof, said tongues and grooves being transversely arranged on said flat sides, and each tongue on one of the said flat sides being located opposite a groove on the other flat side.

3. An article of manufacture for a stamp mill screen, consisting of a bar or plate thicker along one edge than along the edge opposite, said bar or plate having flat sides and having tongues thereon, said tongues being transversely arranged with respect to said bar.

4. An article of manufacture for a stamp mill screen, consisting of a plate or bar thicker along one edge than along the opposite edge, said bar or plate having flat sides and having tongues and grooves formed on said flat sides, the said tongues and grooves being transversely arranged with respect to said bar.

5. In a stamp mill screen, the combination of a frame and plates or bars supported by the frame, the said plates or bars having projections or tongues holding them spaced apart and having their edges on the receiving face of the frame of greater thickness than the edges along the discharge face of the frame.

6. In a stamp mill screen, the combination of a frame and plates or bars supported by the frame, the said plates or bars having projections or tongues holding them spaced apart, and depressions for receiving the said tongues, and having their edges on the receiving face of the frame of greater thickness than the edges along the discharge face of the frame.

7. In a stamp mill screen, the combination of a frame and plates or bars supported by the frame, the said plates or bars having projections or tongues holding them spaced apart and having their edges on the receiving face of the frame of greater thickness than the edges along the discharge face of

the frame, and tie rods for holding the bars or plates together in the said frame.

8. In a stamp mill screen, the combination of a frame and plates or bars supported
5 by the frame, the said plates or bars having projections or tongues holding them spaced apart and having their edges on the receiving face of the frame of greater thickness
10 than the edges along the discharge face of the frame, and tie rods for holding the bars or plates together in the said frame, said tie rods passing through the bars or plates and the projections or tongues thereon.

9. In a stamp mill screen, the combination
15 of an outer casing, an inner frame consisting of angle bars fitting within the outer

casing, plates or bars supported by the inner frame and spaced apart to form openings between them, the plates or bars being of greater thickness at the receiving face of
20 the frame, so as to form openings increasing in size from the receiving face of the screen to the discharge face, and tie rods holding the bars or plates in position in the inner
25 frame.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

DARIUS COMSTOCK EN EARL.

Witnesses:

CHASE WITHROW,
HENRY J. HAWLEY.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
Washington, D. C."