

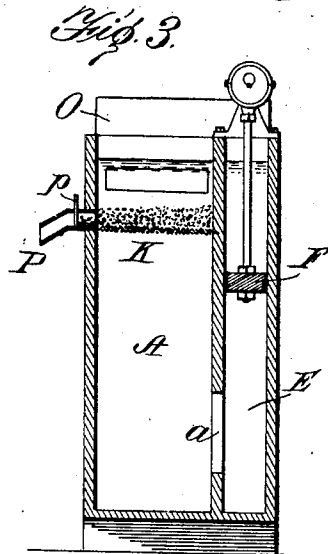
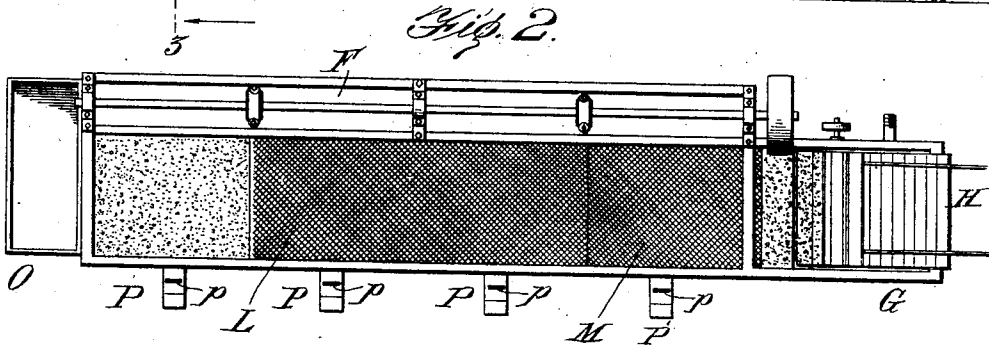
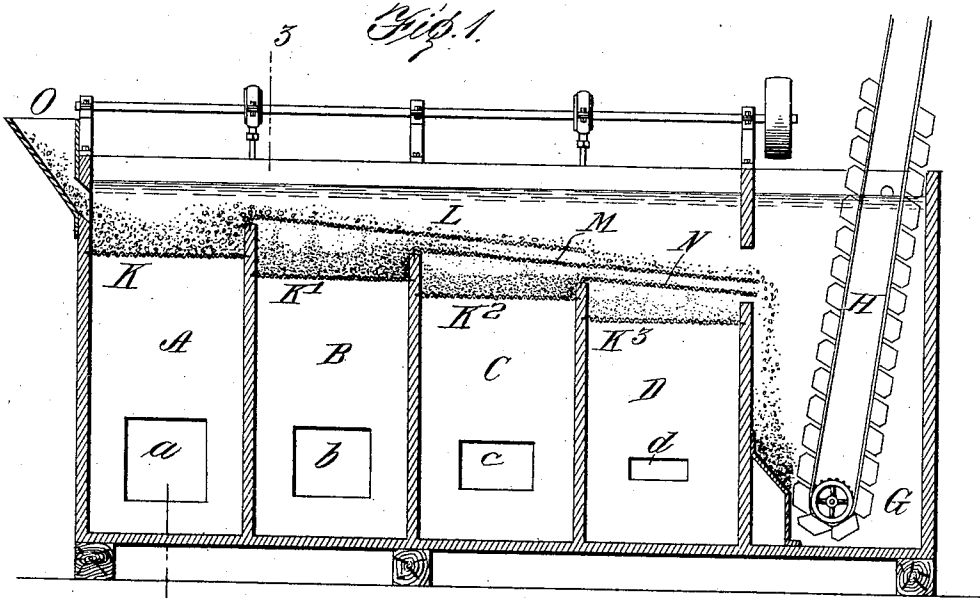
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PATENTED JULY 17, 1906.

G. O. MARRS.

COMBINED SCREEN SIZING AND JIGGING APPARATUS FOR ORES.

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UNITED STATES PATENT OFFICE.

GEORGE O. MARRS, OF WALKER, ARIZONA TERRITORY.

COMBINED SCREEN SIZING AND JIGGING APPARATUS FOR ORES.

No. 826,178.

Specification of Letters Patent.

Patented July 17, 1906.

Application filed April 18, 1906. Serial No. 312,474.

To all whom it may concern:

Be it known that I, GEORGE O. MARRS, a citizen of the United States, residing in Walker, in the county of Yavapai and Territory of Arizona, have invented a certain new and useful Combined Screen Sizing and Jigging Apparatus for Ores, of which the following is a specification.

The primary object of my invention is to provide means for screening and jigging crushed ores in a single apparatus by a continuous process.

In carrying out my invention I provide a series of jigging-compartments and a series of screens. The overs or waste from the first compartment passes onto a screen through which the finer material is sifted into the second compartment, while the larger material is carried toward a tailings-compartment. Each compartment in the series in like manner delivers its overs to a screen which sifts into the next compartment the finer material, while the coarser material is carried toward the tailings-compartment. The jigging-compartments are connected with a chamber in which a plunger reciprocates vertically by means of ports or openings of different sizes, whereby the water is made to rise and fall in varying degrees in the several compartments. At the upper end of each jigging-compartment there is a perforated partition which supports the material being jigged. This partition is of fine mesh and does not allow the material to pass through it, but permits the passage of water. The material after being jigged is not, as heretofore, dropped into hatches below the partitions, but is drawn off at the side from above the partitions by means of suitable taps.

In the accompanying drawings, Figure 1 shows a longitudinal central section through an apparatus embodying my improvements. Fig. 2 is a plan view thereof. Fig. 3 shows a transverse section on the line 3 3 of Fig. 1 looking in the direction of the arrow.

A series of jigging-compartments A, B, C, and D are formed in a suitable casing, and these connect by openings or ports *a b c d* with a chamber E, containing a vertically moving plunger F, which is given a limited up-and-down movement by means of suitable mechanism of usual construction. The openings *a b c d* are of different sizes in order to vary the amount of water delivered to the different compartments, and thereby vary the upward movement of the water in the

compartments. Thus a greater amount of water being delivered through the opening *a*, the water will rise with more force in the compartment A than in the other compartments and will lift the material to a greater extent. The several jigging-compartments are provided near their upper ends with perforated partitions $K\ K'\ K^2\ K^3$. These are of fine mesh, allowing water to pass up through them, but preventing the passage of the material being jigged. The crushed ore is delivered through a hopper O to the perforated partition K in the compartment A. A screen L of, say, one-eighth-mesh size bridges the compartment B and also preferably bridges the compartment C, as shown. Another screen M of, say, one-sixteenth-mesh size bridges the compartment C and the compartment D, being arranged below the plane of the screen L. A third screen N of, say, one-thirtieth-mesh size bridges the compartment D, being arranged below the plane of the screen M. All of the screens are inclined toward a tailings-compartment G, in which operates a bucket elevator H of usual construction.

In the operation of this apparatus pulsations are given to the water by means of the plunger F in the usual way, and the water operates on the crushed ore in the usual manner in jigging-machines of this class.

Ore crushed to, say, one-fourth-mesh size is fed in through the hopper O onto the perforated partition K in compartment A. Here most of the coarser material accumulates on the partition, while the finer material and some of the coarser material is jigged over onto the screen L. The coarser portion of the material received by this screen is conveyed toward the tailings-chamber G, while the finer material, which will pass through a screen of one-eighth-mesh size, passes to the compartment B and is received by the perforated partition K' , where it is jigged, the most of the coarser portion of this charge being held on the partition K' , while the finer material and some of the coarser material is jigged over onto the screen M of one-sixteenth-mesh size. The finer material received by the screen M is sifted through and is received by the perforated partition K^2 in compartment C, while the coarser material passes on toward the tailings-compartment. In the compartment C some of the coarse material and the fine material is jigged over onto the screen N, the coarser material re-

ceived by this screen being conveyed into the tailings-chamber, while the finer material is received in the compartment D. Overs from the compartment D pass directly into the

5 tailings-chamber G.
I have shown four jigging-compartments in my apparatus and three screens suitably arranged; but of course the number of jigging-compartments and screens may be varied.

10 It will be understood that the material separated and divided into different degrees of fineness is held in suspension on the partitions K K' K² K³. In order to remove this material, I provide exit openings or spouts P, provided with valves or gates *p*.

The apparatus may be operated continuously, crushed ore being supplied as fast as needed at the hopper O and the material being withdrawn through the taps P as fast as it accumulates in the several compartments or at intervals to prevent clogging.

I claim as my invention—

1. A combined apparatus for jigging and
25 size-screening, comprising a series of jigging-compartments provided with horizontal perforated partitions and a series of screens and at a higher level than said partitions, each screen being arranged to receive the overs
30 from one compartment and to deliver the finer material to the next compartment in the series while conveying the coarser material away from said compartment.

2. A combined jigging and size-screening

apparatus, comprising a tailings-compartment and a series of jigging-compartments, 35 each provided near its upper end with a perforated partition, means for supplying crushed material to the first compartment, a screen bridging the next compartment in the series 40 and delivering the finer material thereto, another screen below that first mentioned bridging the third compartment in the series and delivering thereto the finer material received from the second compartment, and 45 means for withdrawing from above the perforated partitions the separated material in the several compartments.

3. The combination of a series of jigging-compartments, a plunger-chamber having 50 ports of different sizes connected with the several jigging-compartments, perforated partitions arranged at different levels in the upper portions of the several compartments, discharge-openings in the compartments 55 above the partitions, means for supplying crushed material to the first compartment in the series above the perforated partition therein, and inclined screens arranged at different levels overlapping each other and 60 bridging the jigging-compartments, substantially as described.

In testimony whereof I have hereunto subscribed my name.

GEORGE O. MARRS.

Witnesses:

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