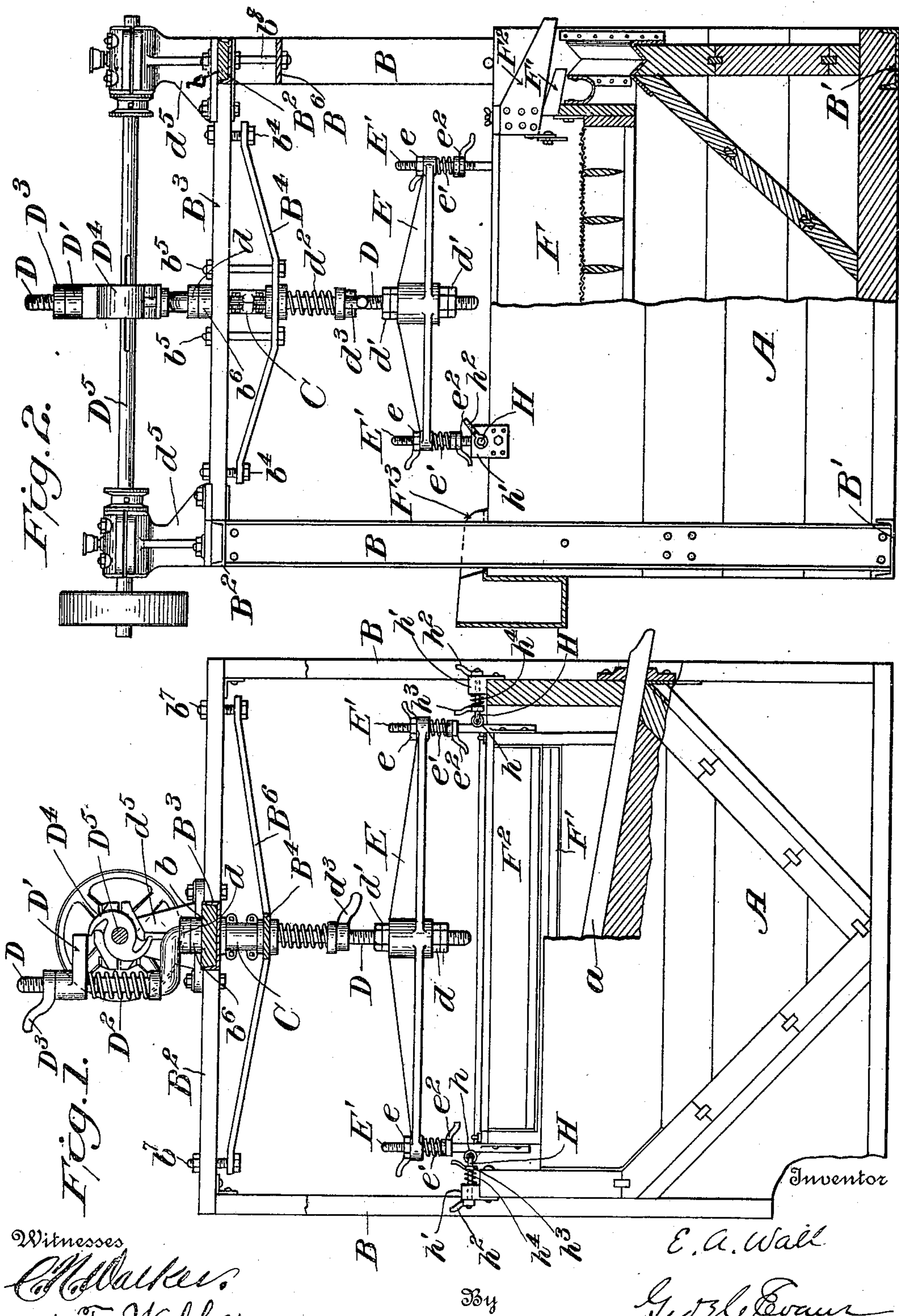


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ORE AND COAL JIG.  
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993,481.

Patented May 30, 1911.



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# UNITED STATES PATENT OFFICE.

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ORE AND COAL JIG.

993,481.

Specification of Letters Patent.

Patented May 30, 1911.

Application filed February 9, 1911. Serial No. 607,675.

*To all whom it may concern:*

Be it known that I, ENOS A. WALL, a citizen of the United States, residing at Salt Lake City, in the county of Salt Lake and State of Utah, have invented certain new and useful Improvements in Ore and Coal Jigs, of which the following is a specification.

My invention relates to that class of ore and coal jigs in which the sieve or screen is given a differential reciprocation in a tank of wash water; the motion being slow in the upward movement of the sieve and quick in its downward plunge. In this class of machines the great difficulty lies in preventing a wobbling action of the sieve or screen which action results in uneven work. Where the sieve may be held absolutely in its adjusted position very large sieves may be employed thus greatly increasing the output. Moreover, such sieves should be capable of adjustment on their supports during operation as it is at such time that the need of adjustment is discovered and the degree thereof may be better determined. It is also essential or highly desirable that the frame work carrying the sieve should be as nearly rigid as possible and that the sieve should be held against all movement lateral to its line of motion.

The objects of the invention are, therefore, to provide a jig in which the sieve may be adjusted, on its carrying rods, while in motion; to provide means for guiding the sieve and holding it against movement lateral to its line of motion; and finally to provide a perfectly rigid frame for supporting the sieve and its actuating mechanism. These objects I accomplish by the mechanism shown in the accompanying drawing in which—

Figure 1 is a side elevation partly in section of an ore jig with my improvements applied. Fig. 2 is a sectional end elevation of the same.

A designates the tank formed in the usual manner and provided at one side with an off-take chute *a*. From the four corners of the tank rise metallic channel standards B, connected at their lower ends by similar sills B' and at their upper ends the standards B are connected by cross beams B<sup>2</sup> also of

channel iron. The channel irons or bars are preferably reinforced by wooden fillers *b*. Across the middle of the top framing extends a channel bar B<sup>3</sup> also having a wooden filler *b*. At the center of the bar or beam B<sup>3</sup> is a vertical guide sleeve C, supported by a truss or strut B<sup>4</sup> secured at its ends to beam B<sup>3</sup> by bolts *b*<sup>4</sup>, and secured at its middle to the beam B<sup>3</sup> by vertical bolts *b*<sup>5</sup>, at opposite sides of the sleeve C. This bar or beam B<sup>3</sup> is the bumper bar and has an annular rubber or like cushion *b*<sup>6</sup> on its upper side to receive the downward bump or blow of a bumper collar *d*, on the actuating rod D, which extends down through cushion *b*<sup>6</sup> and bearing sleeve C. The end beams B<sup>2</sup> are also provided with bracing struts or trusses B<sup>6</sup>, secured at their ends by bolts *b*<sup>7</sup>, and at their middle portion by bolts *b*<sup>8</sup>. The lower threaded end of the actuating rod D carries a cruciform spider E, secured firmly and adjustably on the rod by the nuts *d'*, *d'*. The ends of the four arms of the spider E have non-threaded apertures and up through these apertures project the threaded ends of four sieve-supporting rods E' firmly bolted at their lower ends to opposite sides of the sieve F, of any approved size and construction.

The upper ends of the rods E' are provided with handled or wing nuts *e*, engaging the upper sides of the spider E, while below the spider the rods are provided with helical springs *e'*, bearing against the lower side of the spider and forced up thereagainst by the nuts *e*<sup>2</sup>, on which the lower ends of the springs *e'* rest. These springs *e'* are for the sole purpose of holding the spider E to the nuts *e*, and their tension is so adjusted by the nuts *e*<sup>2</sup> that there will be no yielding movement of the sieve F, on the spider when reciprocated. At any time during the working of the sieve that the operator may discover that it requires any adjustment whatever the upper nuts *e* or any one of them may be turned up or down as may be required and the springs will hold the nuts *e* to the spider and prevent any reciprocatory movement of the rods which would follow the use of nuts on the rods at opposite sides of the spider. This will be easily appre-



ciated by referring to the nuts  $a'$ , on the upper ends of the rods  $a'$ ,  $a'$ , in my Patent No. 506,751, Oct. 17th, 1893, where it was necessary to stop the machine in order to ad-  
5 just the nuts.

The sieve F, is provided with a lower discharge chute  $F'$ , for the concentrate and an upper longer chute  $F^2$  for the tailings constructed and adjusted substantially as in  
10 said patent and a like feed chute  $F^3$  is also provided.

The actuating rod D is provided with a compression spring  $d^2$ , bearing at its upper end against the lower end of guide sleeve C,  
15 and resting at its lower end on the tension nut  $d^3$ , also having a wing or handle by which it may be adjusted to vary the force of the downward thrust of the sieve while the same is in operation.

Above the framework the rod D is offset and provided at its upper portion with a tappet  $D'$ , resting on a spring  $D^2$  which holds it up to its adjusting nut  $D^3$  at all times. By turning this nut  $D^3$  the tappet  
20 may be adjusted, while the machine is in operation, to vary the length of throw of the rod D. This tappet  $D'$  is engaged by a cam  $D^4$  on a rotary shaft  $D^5$ . The bearings  $d^5$  are mounted on top of the cross beams  
25  $B^2$ , directly over the middle of the trusses  $B^6$ . This cam and tappet mechanism is shown as the preferable means of operating the screen and forms the subject matter of my Patent No. 947,874, Feb. 1st, 1910. I do  
30 not limit myself to its use however.

In order that the sieve may have a perfectly true vertical movement I secure two horizontal guide bars H, H, at each side of the tank A and provide their inner ends  
40 with grooved rollers or sheaves  $h$ , which bear on the rods  $E'$ . These guide bars or rods H pass freely at their outer ends through non-threaded openings in brackets  $h'$  mounted on the upper edge of the tank.  
45 The outer threaded ends of the guide rods are provided with handled nuts  $h^2$  bearing against the outer sides of the brackets  $h'$ , while the inner portions of the rods are provided with similar nuts  $h^3$ , between which  
50 and the inner sides of the brackets, the rods are provided with helical springs  $h^4$ , tending to force the rods inwardly so that their adjusting nuts  $h^2$  are held against the outer sides of the brackets. The springs are  
55 strong enough to prevent all longitudinal movement of the guide rods, due to lateral pressure from the sieve. The rods H may be adjusted at any time to bring the rollers  $h$  into proper relation to the suspension rods  
60  $E'$ , by turning the nuts  $h^2$  in the proper direction. It will be seen therefore that the sieve F may be adjusted at any time by the hand nuts  $e$ , and that its vertical travel may be held perfectly true by adjusting the  
65 nuts  $h^2$ .

What I claim is:—

1. An ore jig comprising a tank, a sieve therein, a cruciform frame or spider, vertically extending threaded rods extending  
70 up from the sieve freely through the ends of the spider arms, adjusting nuts on the upper ends of the rods, springs on the rods below the spider and forcing it up firmly against said adjusting nuts, and an actu-  
75 ating mechanism connected with the spider for reciprocating the sieve, the said springs being of a strength too great to yield under the reciprocation of the spider and yielding only when the nuts are operated.

2. An ore jig comprising a tank, a sieve,  
80 provided at opposite sides with suspension rods, a four-armed spider having apertures in the ends of its arms through which said rods freely pass, adjusting nuts on the rods  
85 at the upper side of the spider arms, tension nuts on the rods below the spider, springs on the rods between the lower nuts and under side of the spider and holding the spider firmly against the upper or ad-  
90 justing nuts, a central vertical actuating rod connected to the center of the spider and means for actuating the rod.

3. An ore jig comprising, a tank, a vertically reciprocating screen therein, leveling  
95 means for adjusting the angle of the screen, horizontally adjustable guide rods at the upper side of the tank provided at their inner ends with guide rollers engaging opposite sides of the screen, and bearings on  
100 the upper edge of the tank through which the guide rods extend.

4. An ore jig comprising, a tank, a vertically reciprocating screen therein, leveling  
means for adjusting the angle of the screen, bearings on the upper opposite sides of the  
105 screen, horizontally adjustable guide rods extending through said bearings and having rollers at their inner ends engaging opposite sides of the screen, adjusting nuts on  
110 the outer ends of said rods, and springs on the rods at the inner sides of the bearings and holding the rods immovable except to the action of their adjusting nuts.

5. An ore jig comprising, a tank, a sieve  
115 having a plurality of upright suspension rods, a spider adjustably connected to the upper ends of the rods, an actuating rod connected to the center of the spider, for operating said rod, and a series of hori-  
120 zontal, adjustable guide rods on the upper edge of the tank provided at their inner ends with grooved guides engaging the vertical suspension rods and holding them against lateral movement.

6. An ore jig comprising, a tank, a sieve  
125 having a plurality of upwardly extending suspension rods, a plural-armed spider connected to the upper ends of said rods, an actuating rod connected to the center of the spider, means for reciprocating the rod, a  
130



plurality of horizontal guide rods, bearings  
on the upper edge of the tank through  
which the guide rods freely pass, grooved  
rollers on the inner ends of the guide rods  
5 engaging the vertical suspension rods, ad-  
justing nuts on the outer ends of the guide  
rods, springs on the guide rods at the inner  
sides of their bearings and tension nuts on  
the guide rods against which the inner ends

of the springs bear to hold the rods firmly 10  
in their innermost adjusted positions.

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

ENOS A. WALL.

Witnesses:

A. M. PARKINS,  
GEO. H. EVANS.

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

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