

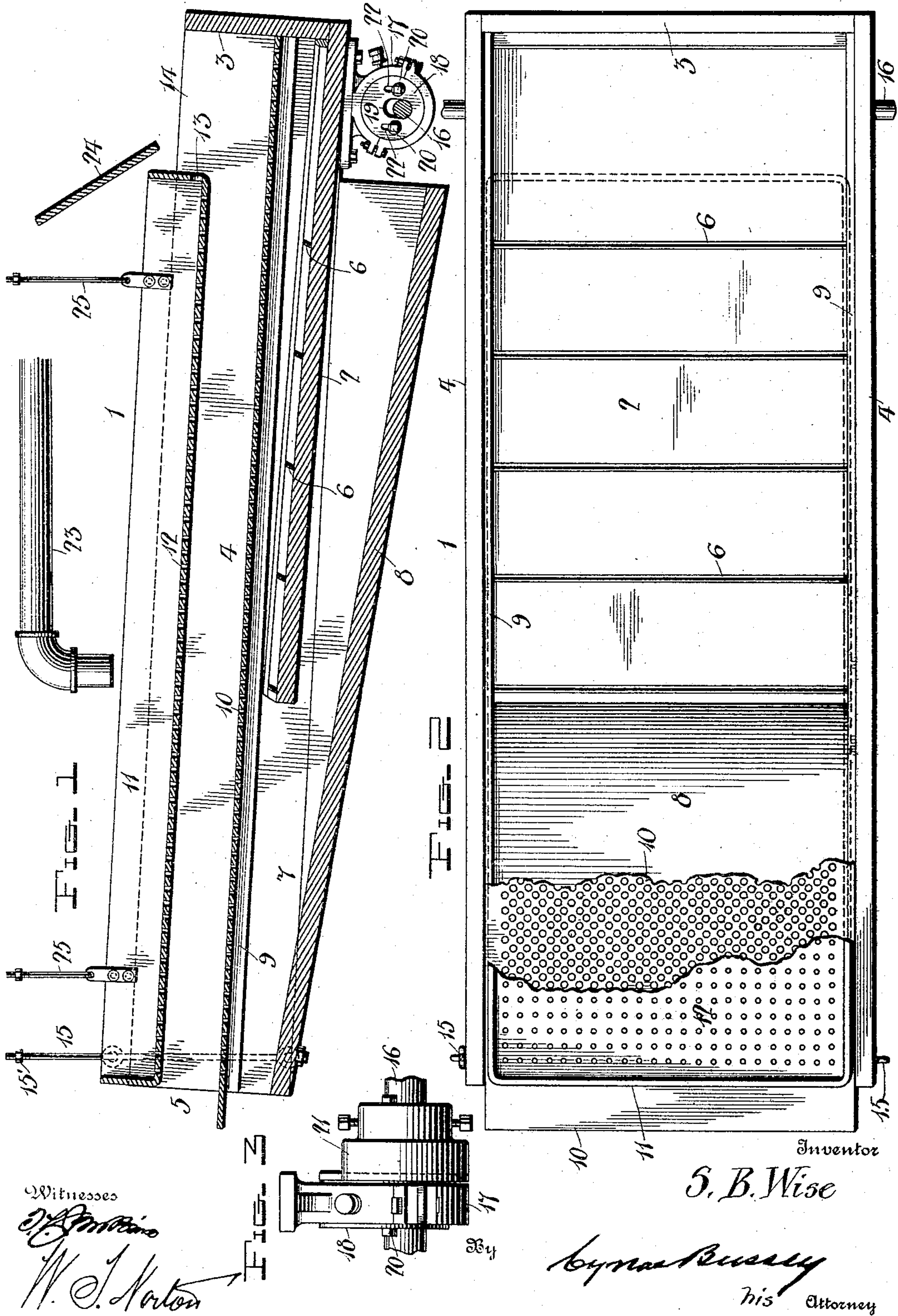
No. 765,801.

PATENTED JULY 26, 1904.

S. B. WISE.
ORE WASHER AND SEPARATOR.

APPLICATION FILED JULY 11, 1903.

NO MODEL.



UNITED STATES PATENT OFFICE.

SAMUEL B. WISE, OF WHITEOAKS, TERRITORY OF NEW MEXICO.

ORE WASHER AND SEPARATOR.

SPECIFICATION forming part of Letters Patent No. 765,801, dated July 26, 1904.

Application filed July 11, 1903. Serial No. 165,047. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL B. WISE, a citizen of the United States, residing at Whiteoaks, in the county of Lincoln and Territory of New Mexico, have invented new and useful Improvements in Ore Washers and Separators, of which the following is a specification.

In an application for patent filed by me July 11, 1903, Serial No. 165,049, I have shown, described, and claimed a machine or apparatus for placer-mining operations, which machine is comprised, broadly considered, of a conveyer for the material, a regulable feeder receiving the material from the conveyer, an ore washer and separator supplied with material by said feeder, a table or tables receiving and cleaning the separated material, cleaning and settling tanks for recovering the water free from the material, and means for disposing of the waste material or gangue.

The present application relates to the ore washer and separator forming a part of the above briefly-described organism, which portion of the apparatus or machine is provided for the purpose of effecting the cleaning and partial separation of the valuable material from the gangue and disposing of the latter, the cleaning and separating operations being accomplished by what is termed the "wet" method or process.

The nature of the present invention, the details of the operation, and the results accomplished are specifically set forth in the following description, and in connection with such detailed description attention is directed to the accompanying drawings, in which—

Figure 1 is a vertical longitudinal sectional view of an ore washer and separator embodying my invention. Fig. 2 is a plan view, partly broken away. Fig. 3 is an enlarged detail view of the variable eccentric.

Referring to the drawings by numerals, 1 denotes a box or casing having an open top, a bottom 2, extending from a front wall 3 to a point approximately midway of the length of the box or casing, sides 4 4, and an open rear end 5. The bottom is provided on its upper side with transversely-disposed riffle-bars 6 6, inclined toward the front of the ma-

chine, and to the rear of said bottom is an opening 7, affording the outlet for the separated material, which opening communicates with an inclined trough 8, extending from the rear end of the box or casing to a point short of the casing-front, at which point it discharges.

Secured to the inner side of each side wall 4 is a cleat 9, the cleats affording the support for a screen 10, which is inserted through the rear open end of the box or casing and is removable to afford access to the riffled bottom 2. The screen preferably projects at its rear end beyond the rear end of the box or casing, as shown.

In the box or casing above the screen 10 is a pan 11, having a perforated bottom 12 and a discharge-outlet 13 in its front wall, from which opening a relatively heavy jet of water issues to effect disintegration of the material entering the box. The pan is located to the rear of the box or casing front 3 sufficiently to provide an opening 14 of the proper dimensions to freely receive the material which is deposited therethrough on the screen 10. The box or casing is suspended at its rear end by hanger-rods 15, and its front end is supported by a shaft 16 and an interposed eccentric, which imparts to the box or casing combined vertical and horizontal vibratory movements. The strap 17 of the eccentric is bolted to the under side of the bottom 2 beyond the discharge end of the trough 8. The cam 18 is adjustable on the shaft 16 to vary the range of the vibratory movements of the box or casing, the cam being provided with a slot 19 for the shaft, and the adjusted position of the cam is maintained by set-nuts 20 20, inserted in a sleeve 21, keyed to the shaft 16 and occupying slots 22 22 in the cam.

In operation water is supplied to the pan—for example, by a pipe 23—and the material to be washed and separated is fed through the opening 14 onto the front end of the screen 10. Preferably an inclined plate 24 is employed to direct the material to said opening 14. The box or casing is, as shown, rearwardly inclined in an upward direction, which gives to the screen and bottom a like inclina-

tion. The box or casing being given the described vibration, the material, with the water discharging freely from the perforated bottom and opening 13, is conveyed rearwardly along the screen, the bulk of the water being discharged at said opening 13; but sufficient water is discharged from the perforations in the pan-bottom to effect thorough saturation of the material. The material is subjected by the vibration of the box or casing to agitation and, as stated, is propelled toward the rear end of the screen by such movements. The screen-orifices are of the proper diameter to allow the finer particles to pass therethrough, but to exclude the coarser particles, such as stones and other hard substances, which tail over the rear end of the screen and are conveyed away. The screened material falls on the bottom 2 and is propelled over the same by the vibrations of the box or casing, and in such movement of the material a portion of the valuable particles is caught and retained by the riffles. The material not so caught passes over the rear end of the bottom and delivers into the trough 8, the slope of which is sufficient to overcome the tendency to rearward propulsion produced by the vibrations of the box or casing. From the trough the material is discharged for further treatment.

It will be noted that throughout the passage of the material through the separator it is continuously subjected to the action of the water discharged from the pan and that the disintegration of the larger lumps, which is the result of this saturation, is facilitated by the continual agitation of the mass produced by the peculiar vibrations of the separator. The dislodged finer particles pass at once through the screen; but the larger lumps are slowly propelled rearwardly over the screen and in their travel are sufficiently disintegrated and reduced in size to pass through the screen-orifices before reaching the rear end of the screen. The screened material falls, as stated, on the bottom 2 and is propelled thereover and during its travel is further subjected to washing and agitation. The heavier valuable material seeks the bottom of the mass during this further disintegrating action and lodges in front of the riffle-bars, from whence it is recovered after removal of the screen.

The rod 15, by which the rear end of the box is suspended, is comprised of flexibly-jointed sections, the upper one of which is threaded and occupies an opening in a support, (not shown,) and 15' is a nut screwed on said upper end and serving as a means of adjustment by which the inclination of the box may be varied according to the character of the material to be treated and also to obtain the proper inclination of the box regardless of the angle of the ground on which the

machine rests. Likewise also the water-pan 11 is suspended at its ends by hanger-rods 25, adjustable relatively to the support to vary the inclination of the pan according to the ground angle and to regulate the discharge of water at the opening 13.

I claim as my invention—

1. An ore washer and separator comprising a longitudinally-inclined box or casing provided with a screen above a riffled bottom, said screen and bottom discharging at their upper ends, adjustable hangers supporting the box at the upper end, means at the lower end supporting and imparting vertical and horizontal movement to the box, whereby material under treatment is tossed toward the upper end thereof, in combination with a water-distributing pan supported above and adjustable independently of the box or casing.

2. An ore washer and separator comprising a box having a closed lower or receiving end and an open upper or discharge end and an upwardly-inclined riffled bottom terminating short of the upper end of the box, and a removable screen above and of greater length than the riffled bottom, and means for imparting a tossing motion to the box and screen, in combination with a water-distributing pan supported above the screen and adjustable independently of the box.

3. An ore washer and separator comprising a box having a closed lower receiving end and an open upper discharge end and an upwardly-inclined riffled bottom terminating short of the discharge end of the box, and a removable screen above the riffled bottom and extending the length of the box, in combination with a water-distributing pan supported above the upper end of the box and adjustable independently thereof and having its front wall located to rear of the front lower end and provided with jet-openings.

4. An ore washer and separator comprising an inclined box closed at its lower receiving end and open at its upper discharge end and having an upwardly-inclined riffled bottom terminating short of the discharge end, a reversely-inclined trough beneath said bottom for receiving material discharged therefrom, a removable screen above the riffled bottom, and a water-distributing pan having a perforated bottom and discharge-openings in its front wall, said pan being supported above and adjustable at each end independently of the box.

5. An ore washer and separator comprising an inclined box, means for vibrating it vertically and horizontally, an inclined riffled bottom for the box terminating short of the open upper end thereof to provide a discharge for the material treated, an oppositely-inclined trough leading from said discharge, a removable screen above the riffled bottom extending beyond the upper open end of the

box, a water-distributing pan of less length
than and supported for independent adjust-
ment above the rear end of the screen the
front wall thereof having discharge-openings
5 located above and to rear of the lower receiv-
ing end of the box.

In testimony whereof I have signed my name

to this specification in the presence of two sub-
scribing witnesses.

SAMUEL B. WISE.

Witnesses:

GEO. E. SLIGH,
FRANK J. SAGER.