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ORE SEPARATOR.

APPLICATION FILED NOV. 20, 1908. RENEWED JAN. 13, 1910.

949,709. Patented Feb. 15, 1910.

2 SHEETS—SHEET 1.

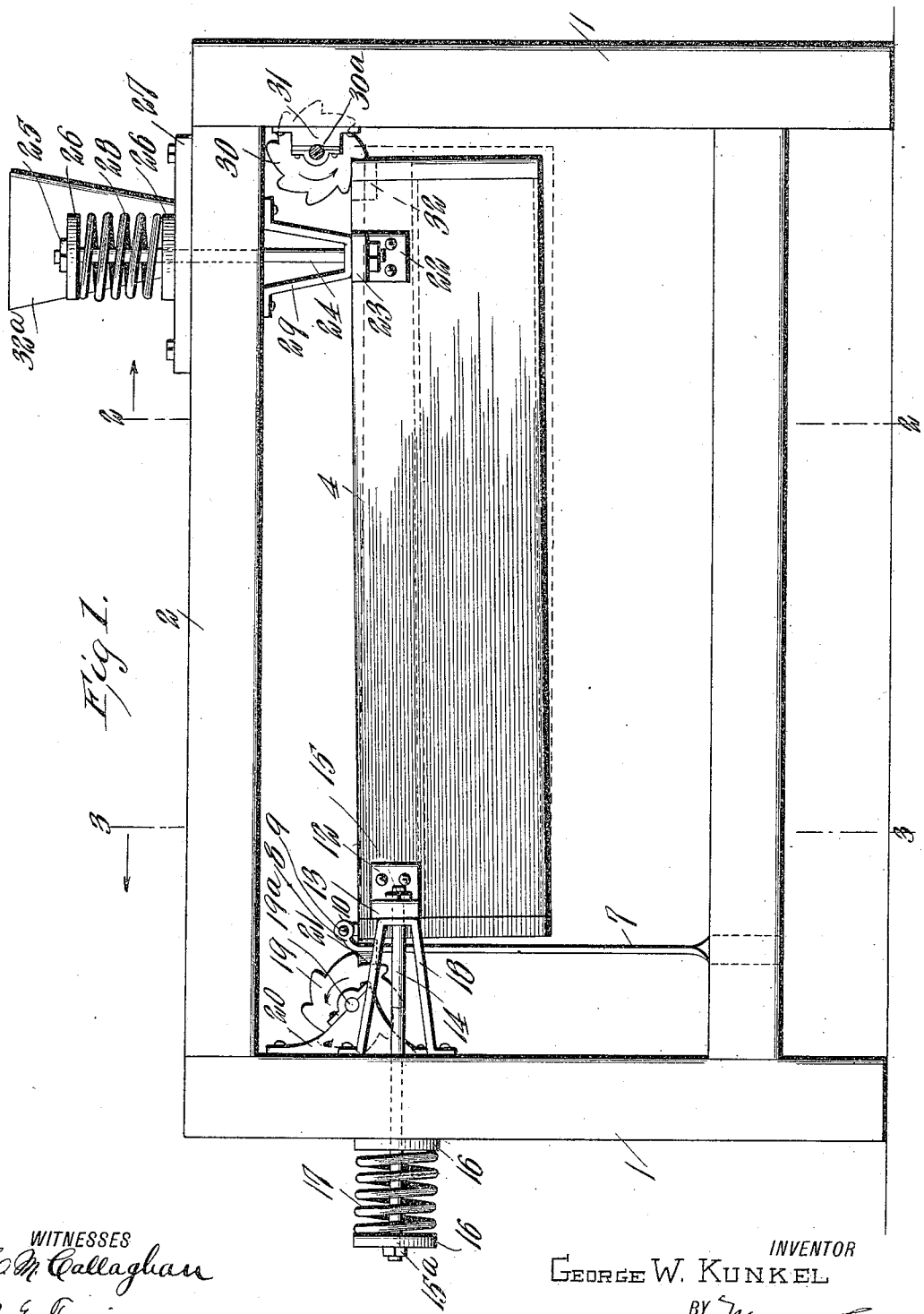

Fig. 1.

WITNESSES

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2 SHEETS—SHEET 2.

Fig. 2.

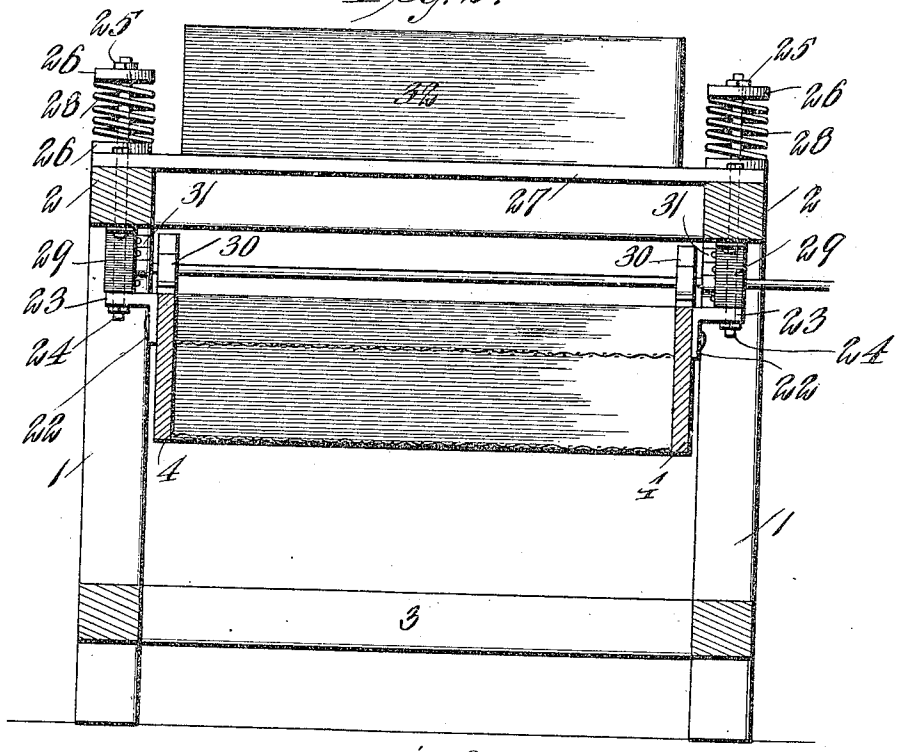
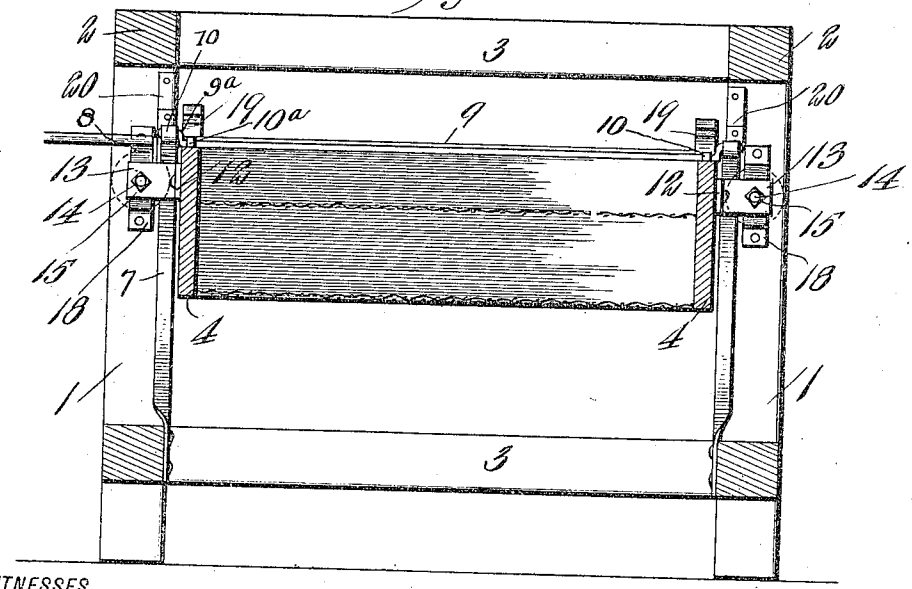


Fig. 3.



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UNITED STATES PATENT OFFICE.

GEORGE W. KUNKEL, OF KING CITY, MISSOURI, ASSIGNOR OF ONE-HALF TO JESSE A. MILLIGAN, OF KING CITY, MISSOURI.

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949,709. Specification of Letters Patent. **Patented Feb. 15, 1910.**

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To all whom it may concern:

Be it known that I, GEORGE W. KUNKEL, a citizen of the United States, and a resident of King City, in the county of Gentry and State of Missouri, have invented certain new and useful Improvements in Ore-Separators, of which the following is a specification.

My invention is an improvement in ore separators, and consists in certain novel constructions and combinations of parts hereinafter described and claimed.

Referring to the drawings forming a part hereof, Figure 1 is a side view. Fig. 2 is a section on the line 2—2 of Fig. 1 looking in the direction of the arrow, and Fig. 3 is a section on the line 3—3 of Fig. 1 looking in the direction of the arrow.

The present embodiment of my invention comprises a supporting frame consisting of uprights, connected by longitudinal bars 2 and cross bars 3, and the screen frame is mounted for oscillation within the supporting frame.

The screen frame consists of side plates 4, and end plates 5, the screens 6 being arranged horizontally within the frame. The screen frame is supported at one end by resilient standards 7, which are secured to the lower longitudinal bars 2, and project upwardly therefrom, the upper ends of the standards being bent over as at 8 and connected by a rod 9, which rod has cranks 9^a at each end. Each crank is loosely mounted in an eye 10 formed at the top ends of standards 7, while the rod proper passes through eyes 10^a secured in the top edges of bars 4, and thus are formed pivotally yielding connections between the screen and crank rod and between the crank rod and the supporting standards whereby free longitudinal reciprocation is permitted. At the same end the screen frame is provided with brackets 12 each having an outwardly projecting portion 13, provided with an opening, through which passes a rod 14, the rod extending through the upright 1 of the main frame, the said rod having each end threaded and provided with a nut 15 for retaining it in position. At its outer end the rod is provided with spaced collars 16, one of which bears against the upright and the other against the nut, and a coil spring 17 is arranged between the collars, the spring acting normally to move the screen frame toward the adjacent end of the main frame. A stirrup 18 is secured to the upright within the main frame, and the free end thereof is adapted to engage the outwardly projecting portion 13 of the bracket, while toothed cam wheels 19 are secured to a shaft 19^a which is journaled in bearings 20 on to the main frame, the teeth of the wheels being adapted to engage bumpers 21 secured to the end of the screen frame. At its opposite end, the screen frame is provided with brackets 22 having outwardly projecting portions 23, provided with openings, through which pass rods 24, the rods having their ends threaded and engaged by nuts 25. Collars 26 are arranged in spaced relation on the rods, one bearing against a nut 25, and the other against a rail plate 27, secured to the adjacent longitudinal bar, and a coil spring 28 is arranged between the collars, normally tending to elevate the adjacent end of the screen frame, this elevation however, being limited by a stirrup 29 secured to the longitudinal bar and engage the portion 23 of the bracket 22.

Toothed cams 30 are secured to a shaft 30^a which is journaled in bearings 31, on the main frame, the teeth of the cams being adapted to engage bumpers 32 on the screen frame whereby to move the same downwardly. A hopper 32^a is supported by the main frame, above the screen frame and delivers thereto, at the end remote from the resilient standards.

It will be evident from the description that when the toothed cam wheels 19 and 30 are rotated in any suitable manner in the direction indicated by the arrows thereon, the feed end of the screen frame will have imparted thereto a series of rapid vertical impulses, while the frame will be vibrated rapidly in a horizontal plane and in a longitudinal direction by the cam wheel 19, the cam wheels moving the frame in one direction, and the springs 17 and 28 moving them in the opposite direction. As the ore is fed on to the feed end of the screen, a jumping motion will be imparted thereto, which will tend to move the coarser particles above the finer particles permitting them to pass through the screen, while at the same time,

the ore will be impelled to travel longitudinally of the screen by the action of the cam wheel 19.

I claim.

1. An ore separator, comprising a main frame, and a screen frame, feeding means at one end of the screen frame, means at said end for supporting the same while permitting it to yield downwardly, a cam engaging the screen adjacent to the supporting means for imparting vertical movement thereto, standards at the other end of the main frame and provided in their top ends with eyes, eyes on the screen frame, a rod passing through the eyes on the screen frame and having cranks at its ends, each engaging the eye of the adjacent standard, yielding means engaging the screen frame adjacent to the standards and acting normally to draw it toward the adjacent end of the main frame, and a cam wheel at the said end of the frame to impart a series of longitudinal vibrations thereto.

2. An ore separator, comprising a main frame and a screen frame, standards at one end of the main frame and provided at their top ends with eyes, a rod journaled on the screen and having at each end a crank passing loosely through the eye of the adjacent standard, means adjacent to the standards for imparting a series of horizontal vibrations to the screen, and means at the other end for imparting a series of vertical vibrations thereto.

GEORGE W. KUNKEL.

Witnesses:

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