No. 817,655. PATENTED APR. 10, 1906.

G. MOORE.

ORE SEPARATOR.

APPLICATION FILED FEB. 16, 1906.

2 SHEETS—SHEET 1.

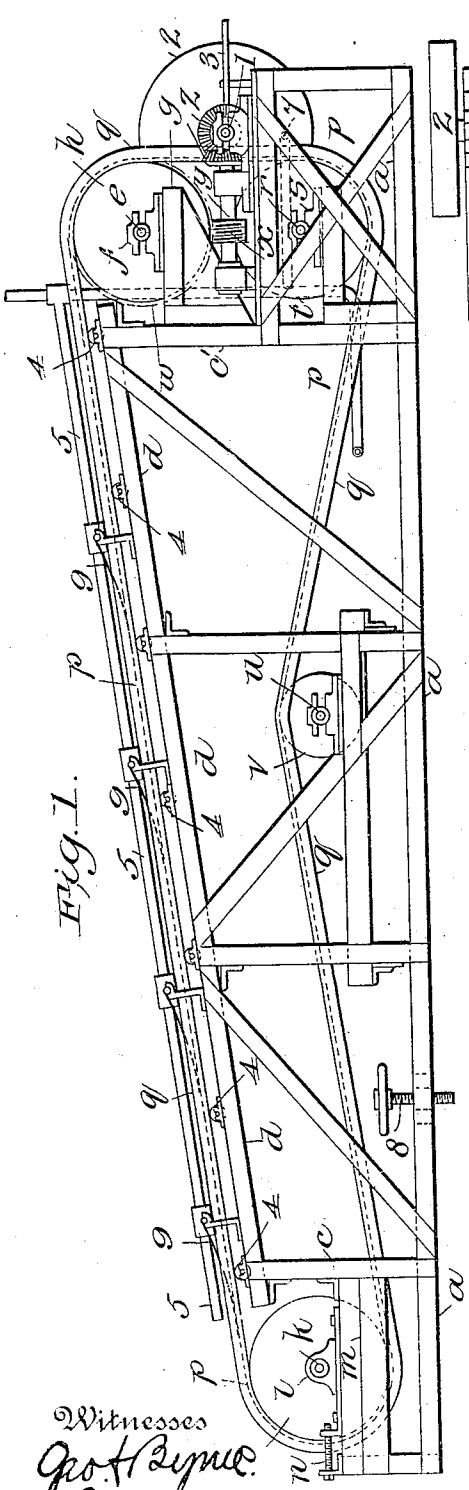

Fig. 1.

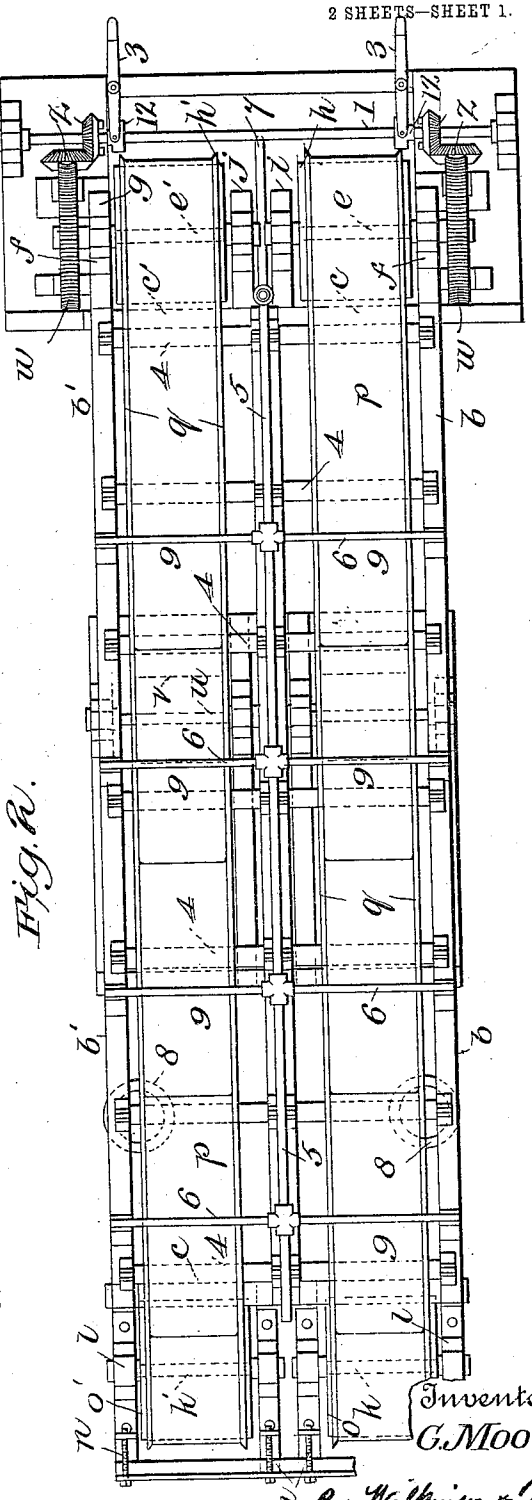

Fig. 2.

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2 SHEETS—SHEET 2.

Fig. 3.

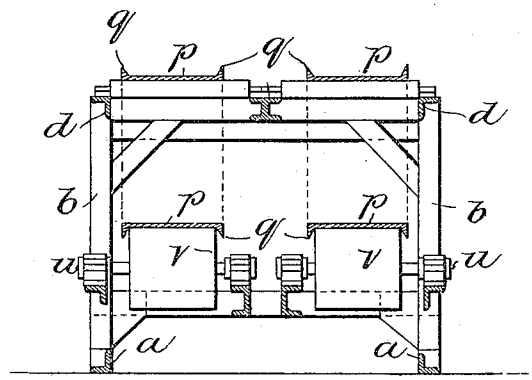
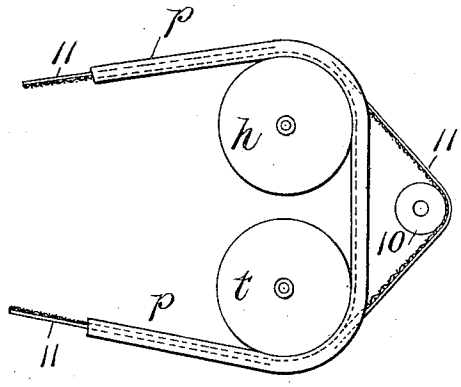


Fig. 4.



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UNITED STATES PATENT OFFICE.

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No. 817,655. Specification of Letters Patent. Patented April 10, 1906.

Application filed February 16, 1906. Serial No. 301,466.

To all whom it may concern:

Be it known that I, GEORGE MOORE, a subject of the King of Great Britain, residing at No. 46 Leadenhall street, London, England, have invented a new and useful Improvement in Ore-Separators, of which the following is a specification.

The object of the invention is to recover as nearly as possible from ore the whole of the gold or other valuable particles, while the machinery is simple and easily worked, cheap, not likely to get out of order, and thoroughly effective for the desired purpose.

In the accompanying drawings, Figure 1 is a side view of my improved separator. Fig. 2 is a plan view thereof. Fig. 3 is a transverse section thereof, and Fig. 4 is a detail view showing the double belt.

In order to put my invention into operation, I make a strong framework consisting of a base *a*, two side frames *b b'*, and two end frames *c c'*, of wood or of angle-iron or bars strongly fitted and riveted together. The frame is rectangular in plan, as shown in Fig. 2, and of great length (which may be varied, as may be found desirable) in comparision with its width, while one end is considerably higher than the other, so that the top, which is open excepting the angle or channel iron frame *d* round it, slopes down from the upper end to the lower one. The angle of the slope may be determined as may be found most effective.

Across the outer side of the upper end of the frame are arranged two horizontal spindles *e e'*, revolving in bearings *f*, carried upon brackets *g*, fixed to the end frame or upon the end frame itself, and upon the spindles *e e'* are fixed two drums *h h'*, the outer sides of which are near the bearings, while their inner ones are separated, so as to leave a considerable space between them, and bearings *i j* are arranged for the spindles in this space. At the other or lower end of the inclined frame similar transverse spindles *k k'*, exactly parallel with the first or upper ones *e e'*, are arranged in bearings *l*, fixed upon a frame *m*, carried upon the horizontal projecting ends of the base of the frame, and preferably provided with adjusting-screws at *n*, by which the bearings can be separated from or made to approach those at the upper end. These lower spindles *k k'* are provided with drums *o o'*, preferably of the same diameter as and parallel and in a line with those *h h'* at the upper end already described.

Round each pair of upper and lower drums are fitted endless belts *p*, of canvas and india-rubber, or rubber or balata, compressed paper, or other suitable material. The outer surfaces of these bands or belts are provided with continuous flexible flanges *q*, projecting for a short distance from the edges of the band, so that they form, with the outer surface of the band itself, a species of trough or sluice-box.

At the upper end of the frame I arrange spindles *r*, revolving in bearings *s*, carried by the frame directly below the upper ones already described, and having fixed upon them two similar drums *t*, preferably of the same diameter as the upper ones. The endless flexible flanged bands *p* after passing over the upper drums *h* pass down and round the lower ones *t* before passing forward to the drums *k* at the lower end of the frame. At or near the center of the length of the frame I arrange parallel transverse spindles *u*, having drums *v v* revolving freely, over which the lower returning part of the endless bands *p* pass, the spindles *u* being at such a height that the endless bands *p* are raised considerably as they pass over them.

Upon the outer ends of the lower transverse spindles at the upper end of the frame I fix worm-wheels *w*, each operated by a worm *x* upon a short horizontal spindle *y* upon each side of the machine, the spindles being connected by beveled toothed wheels *z*, with a transverse spindle 1, turning in bearings upon the base of the machine and driven by a pulley 2, fixed upon it and made to revolve slowly by any convenient power, so that the drums *h h'* at the upper end of the machine are set in revolution at any desired speed, causing the endless bands *p* to travel slowly along, their upper parts moving from the lower to the upper end of the frame. I arrange clutches or disengaging gear 12 of any suitable kind operated by levers 3, by which the gear driving either or both of the belts may be thrown out of gear when desired.

Instead of two parallel belts one belt only (preferably of greater width) may be used, in which case only one set of spindles and drums instead of two, as described above, is necessary.

A sufficient number of freely-revolving rollers 4 of any suitable diameter are arranged across the upper part of the frame at suitable distances apart, so as to support the belt *p* and the material upon it as it travels

along, and strong adjusting-screws 8 are fitted in the base of the frame by which its height can be adjusted, so that the moving belts are perfectly level transversely.

The material to be treated is admitted upon the upper part of the moving belt *p*, and a sufficient quantity of water is supplied through a suitably-arranged central longitudinal pipe 5, having a sufficient number of small transverse pipes 6, through which the water is discharged upon the surface of the belt *p*. These transverse pipes carry flexible waterproof curtains 9 of the kind hereinafter described. Branch pipes 7 are also arranged to supply water for washing the belt at the end where the concentrates collect and also to wash the under side of the belt.

The traveling band *p* may have, if preferred, on its outer face grooves or riffles, and the surface (which catches the fine particles of gold or other material to be saved) may have a rough piece of burlap fixed upon it, either with or without a wire screen attached, or, if necessary, for gold recovery and the treatment of slimes a separate band 11 may be used, as shown in Fig. 4, consisting of the burlap and wire screen lying inside the main carrying-belt *p*, already described. In such cases I make one of the belts (the outer one 11) longer than the other, (see Fig. 4,) so that it can pass as it travels along round a freely-revolving transverse pulley 10, arranged between the two belts opposite the drums *h t* at the higher end of the machine, so that the outer belt 11 is drawn away round the loose pulley 10 (which does not touch the inner belt) and allows the separated surfaces of the two belts, which are ordinarily in contact, to be washed and cleaned.

The flexible waterproof curtains or aprons 9, Fig. 1, are made of pieces of oil-cloth, india-rubber, or other suitable material, and they ordinarily lie loosely upon the bottom of the trough or sluice-box, their lower ends being free to rise or fall. The flow of water and pulp admitted to the sluice is compelled to travel between the bottom of the latter and these aprons, which therefore force the light particles down through the current and upon the sluice-bottom. The lower ends of the curtains at each corner are held in place by a loose wire connection to prevent their being drawn up when working intermittently, when as a rule the movement is considerably quicker.

Having fully described my invention, what I desire to claim and secure by Letters Patent is—

1. In an ore-separator, the combination of a traveling endless belt provided with side flanges, operating means therefor, and a second belt lying upon said first-named belt, and composed of an under layer made of a wire screen, and an upper layer formed of burlap, substantially as described.

2. In an ore-separator, the combination of a traveling endless belt provided with side flanges, pulleys over which said belt runs, operating means for said belt, a second belt lying within said first-named belt and between the flanges thereof, said second belt being composed of two layers, the under layer being a wire screen and the upper layer being burlap, and an idler-pulley over which said second belt runs to separate it for an interval from said first-named belt, substantially as described.

In witness whereof I have hereunto set my hand in the presence of two witnesses.

GEORGE MOORE.

Witnesses:
ALFRED T. BRATTON,
H. D. JAMESON.