

(No Model.)

2 Sheets—Sheet 1.

W. SCULAR.
SEPARATOR.

No. 502,144.

Patented July 25, 1893.

Fig. 1.

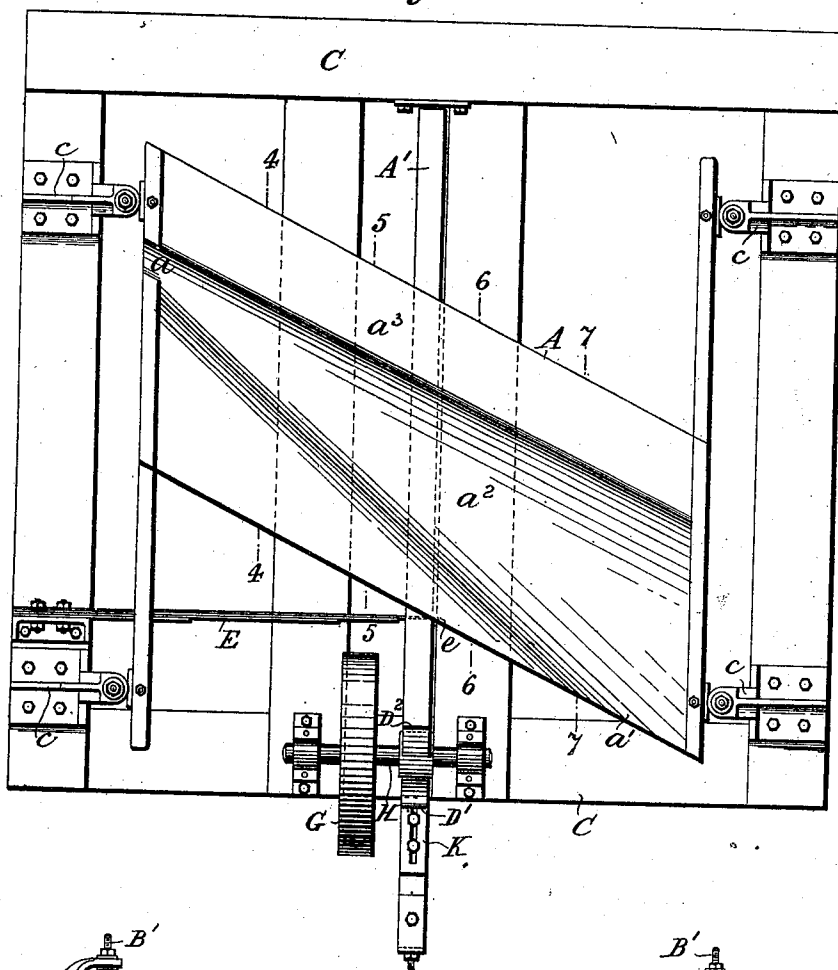
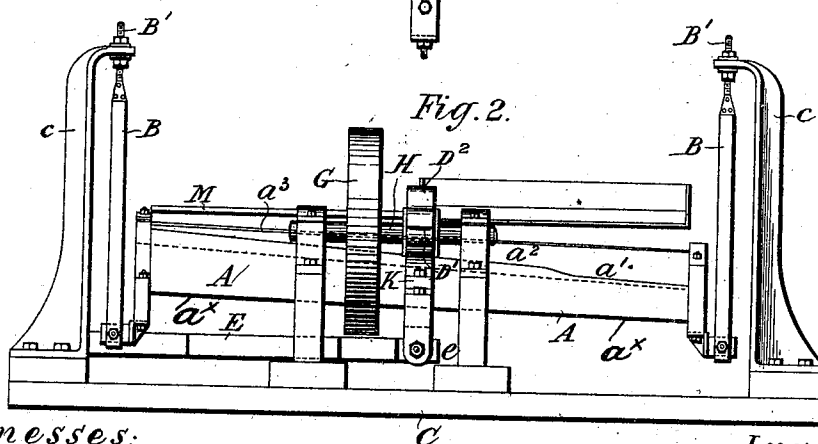


Fig. 2.



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Fig. 3.

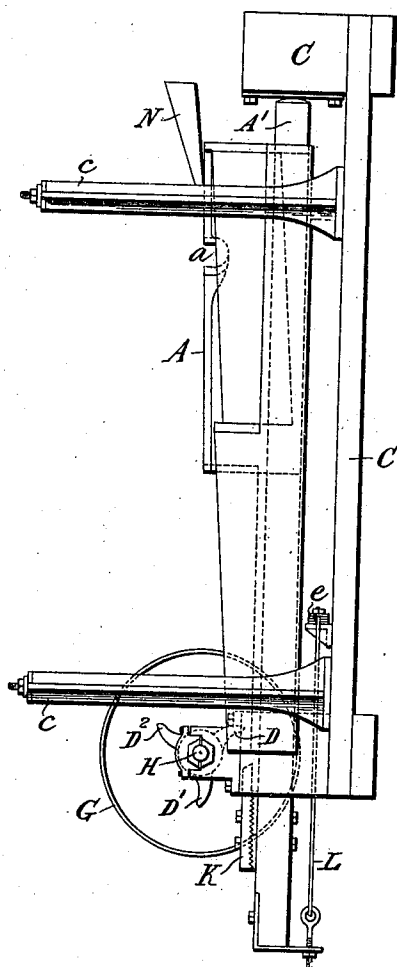
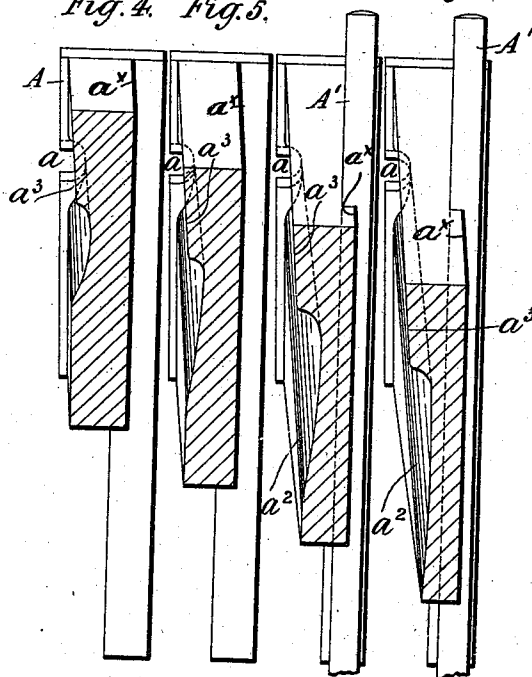


Fig. 4. Fig. 5. Fig. 6. Fig. 7.



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UNITED STATES PATENT OFFICE.

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SPECIFICATION forming part of Letters Patent No. 502,144, dated July 25, 1893.

Application filed September 2, 1892. Serial No. 444,857. (No model.) Patented in England November 14, 1891, No. 19,782.

To all whom it may concern:

Be it known that I, WILLIAM SCOULAR, a citizen of the South African Republic, residing at Johannesburg, South African Republic, have invented certain new and useful Improvements in Separators, (for which a patent has been granted to me in Great Britain, No. 19,782, dated November 14, 1891,) of which the following is a specification.

My invention relates to the class of ore separators and the like which comprise a shaking table and means for supplying the materials and water thereto; and the object is to provide an efficient and economical means for separating pyrites and similar heavy substances containing gold or other metal from crushed ores or compounds containing the same.

My invention is embodied in the separator illustrated in the accompanying drawings wherein—

Figure 1 is a plan; Fig. 2 a front elevation, and Fig. 3 a side elevation. Figs. 4, 5, 6 and 7 are, respectively, transverse sections of the table taken in the planes indicated by the lines, 4—4, 5—5, 6—6 and 7—7, in Fig. 1.

A is a table, suspended at its four corners by metal straps, B, from uprights, c, on a suitable frame, C. The table thus suspended has a to-and-fro percussive motion imparted to it by means of a triple cam D, D', D², which swings it in one direction, a spring, E, which returns it, and a stop-piece, A', fixed to the table and adapted to strike an upright part of the frame C, to produce a jar. The triple cam and the driving wheel G, are mounted on a driving shaft H. The arms of the triple cam engage a bearing piece, K, which is fixed adjustably on a rearward prolongation of the stop-piece A', and this latter is connected by a link L to the free end e of the spring E. The table is suspended by preference from flat, flexible strips of metal, as B, but ropes or chains might be employed in lieu of these. Each strap, as here shown, is furnished with an adjusting screw, B', at its upper end, which passes through an overhanging part of the upright c, and is provided with adjusting nuts. The inclination of the table A may be altered by means of these nuts at will. The

operating cam which I have called a triple cam may have one or more arms; the particular cam employed depending on the speed at which the driving shaft H rotates. When the table has been pushed backward by the cam and released, the spring E will drive it forward forcibly and cause the stop-piece A' to strike the frame and thus impart a jar or shock to the table. This jar, aided by a flow of water, causes the heavy and light particles on the table to separate and the heavier to concentrate.

As seen in Fig. 1, the longitudinal axis of the table A is transversely of and also oblique to the line of vibratory movement imparted by the cam and spring. It is supplied with water from a spray apparatus M. It is so recessed or hollowed that the crushed material supplied to the table at one end (the right in Fig. 1), by a chute N, will be separated by the jarring and vibrating of the table, the heavier particles being discharged at an outlet, a, situated at the opposite end from the chute N, and the lighter particles and the water being discharged from a lower lateral outlet a' at the receiving end. The concentrating recess, a², is of peculiar shape, the floor or bottom being of irregular or uneven contour as will be best seen in Figs. 4, 5, 6 and 7. This recess a² is of somewhat triangular form as seen in plan, the wider being the receiving end. In transverse section, the bottom a^x, is very gradually sloped toward the front side, while at the back, a³, which is oblique to the movement of vibration, it has a steeper or more abrupt margin. The bottom of the recess rises gradually toward the outlet a, where the heavier particles are discharged. The effect of this form of the concentrating recess is to cause the heavier particles containing the metal, to separate from the lighter particles and concentrate in the deeper part of the recess next the margin a³, whence, owing to the obliquity of this margin to the line of motion, it is gradually worked along to the outlet a; the lighter particles, kept partly or wholly in suspension by the water, work off at the lateral outlet a', at the shallower side of the recess. The outlet a being higher than the outlet a', at each jarring

motion the water will detach more and more of the lighter material and wash it back and down toward the outlet a' .

Having thus described my invention, I
5 claim—

1. A separator, comprising a suspended table A, having in it a somewhat triangular concentrating recess, a^2 , said recess having an upper outlet a at one end, a lower lateral outlet a' , near the other end, and a bottom which slopes gradually toward the back and abruptly at the front, and means for imparting a vibrating and jarring motion transversely of and obliquely to the axis of said recess, substantially as set forth.

2. In a separating apparatus, the combination with the table A, having in it a somewhat triangular recess, a^2 , furnished with an outlet, a , for the heavier particles at the apex of
20 the triangle and a lateral outlet, a' , for the

lighter particles near the base of said triangle, of means for imparting a jarring and vibrating motion to said table and means for supplying material to be separated and water to said table, substantially as set forth.

3. In a separating apparatus, the combination with a table A, adapted to be vibrated and having in its upper surface a concentrating recess or compartment, a^2 , which is of somewhat triangular form in plan with outlets a and a' arranged as shown, a bottom, a^x , sloping toward the front and a steeper margin a^3 at the back which is oblique to the movement of vibration, of means substantially as described for vibrating and jarring
35 said table.

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