(No Model.)

G. CARSON.

ORE SEPARATOR AND CONCENTRATOR.

No. 487,248. Patented Dec. 6, 1892.

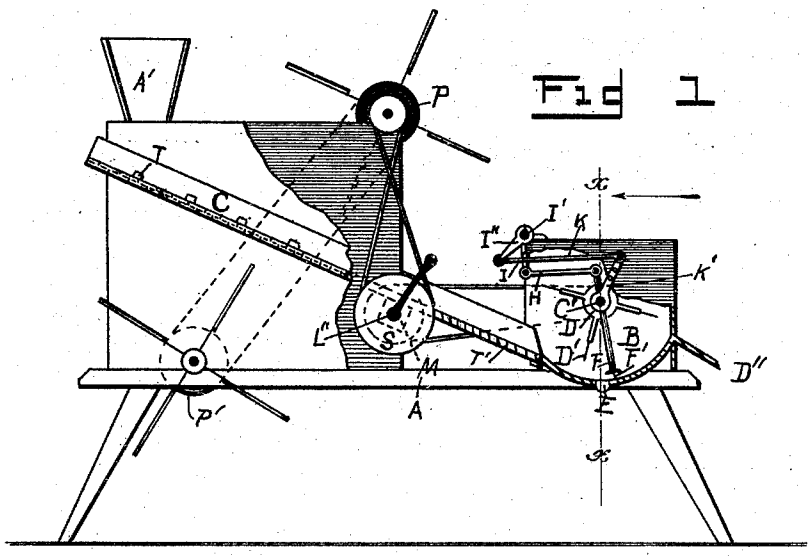

Fig 1

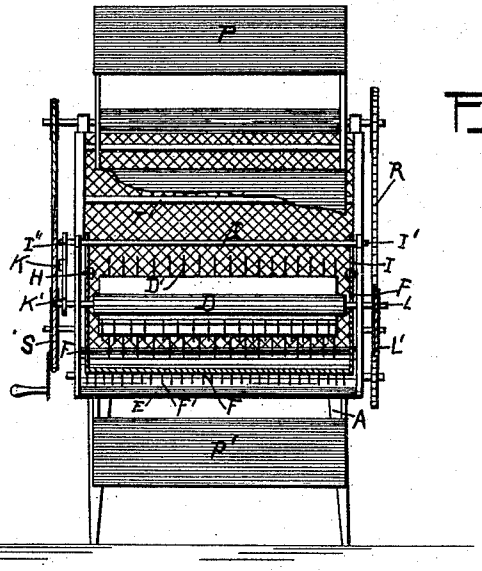

Fig 2

George Carson
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UNITED STATES PATENT OFFICE.

GEORGE CARSON, OF COUNCIL BLUFFS, IOWA.

ORE SEPARATOR AND CONCENTRATOR.

SPECIFICATION forming part of Letters Patent No. 487,248, dated December 6, 1892.

Application filed January 28, 1892. Serial No. 419,605. (No model.)

To all whom it may concern:

Be it known that I, GEORGE CARSON, of Council Bluffs, in the county of Pottawattamie and State of Iowa, have invented certain useful Improvements in Ore Separators and Concentrators; and I do hereby declare that the following is a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

This invention has relation to new and useful improvements in ore separators and concentrators.

The object of this invention is to provide a device that shall be simple of construction and readily operated, as will be described more fully hereinafter, and finally pointed out in the claims.

In the accompanying drawings, Figure 1 shows a side elevation, with parts broken away, of my improved device; and Fig. 2, an end elevation, looking in the direction of line *x x*, Fig. 1.

Similar letters of reference refer to corresponding parts.

The device is more especially adapted to be used in the concentration of dry auriferous sand, placer, or pulverized ore, and comprises, essentially, the supporting-standard A, the concave trunk B, and the pivoted inclined rocking apron C, as shown in Fig. 1. The trunk B is mounted upon the standard A at one end, and consists of an open-sided trunk provided centrally with the shaft C′, upon which is mounted the drum D, having two or more projecting ribs, from which extend a suitable number of pins D′. To one side of the trunk B, which is provided with a concaved bottom, is pivoted the apron C, while the other side ends in an opening or feedway D″.

Mounted within a longitudinal opening of the curved bottom of the trunk is the discharge or valve rod E, which is provided with a flat portion, which when brought into a vertical position provides an opening by means of which the mineral contents of the trunk may be discharged.

Working upon the shaft C′, between the ends of the drum D and the side of the trunk B, is the agitating-comb F, (shown in section, Fig. 2,) provided with the downwardly-projecting pins F′, which are adapted to oscillate and agitate the contents within the concave bottom of the trunk B. The comb is provided with two projecting arms, to which are movably connected the links H H, which in turn are secured to the depending arms I I of the transverse shaft I′, as will be noticed in the figures. The shaft I′ is in addition provided with the crank-arm I″, mounted upon the shaft without the trunk, which is linked by means of the rod K to the crank-arm K′, so that when the crank-arm I″ revolves with the shaft C′ it imparts an oscillatory motion to the comb F by means of the connected rods H and K. Upon the opposite side the shaft C′ is further provided with the pulley L, which is in suitable belt connection with the pulley L′ of the cam-shaft L″, as shown in the figures.

The shaft L″ is mounted within a suitable framework and is provided with two rectangular cams M, (shown in dotted lines in Fig. 1,) upon which the apron C rests and by means of which it is given a jigger movement, so as to successively joggle the crushed mineral or dry placer which is fed upon the apron through the hopper A′ into the agitating-trunk B.

Mounted above and below the vibrating apron C are the fans P P′, connected by means of the driving-chain R and receiving power from the pulley S upon the main driving and cam shaft L″.

Power is applied to the shaft L″ by hand or any other suitable means.

The apron C comprises a frame within which is held a screen of suitable mesh. The apron is further provided with the transverse bars or riffles T, over which the mineral is fed, the lower portion T′ of the apron preferably being solid.

When all the parts have been properly arranged and constructed of suitable material, the operation of my device is as follows: The pulverized ore or auriferous sand is fed through the hopper A′ upon the apron C, which is continually agitated. As the mineral passes down the inclined apron it is acted upon by a blast from below from the fan

marked P′, which causes the dust and lighter particles to rise and be blown off by fan P. The sand and mineral pass down and over the apron into the concave trunk B, where they are agitated, the larger particles being carried forward by means of the comb F and the spiked drum D toward the discharge end D″ of the trunk, the mineral settling within the concave bottom of the trunk, from whence it is discharged through the opening operated by means of the valve-rod E, which rod is operated by hand whenever a suitable amount of mineral has been collected.

If desired, the bottom of concave trunk may be closed over discharge-rou E and a sufficient quantity of mercury placed in the bottom of the concave to allow the teeth of the comb F to pass through the mercury, and thus cause the gold to amalgamate therewith, the sand passing off at the discharge side of the concave box into a tail sluice-box affixed for that purpose.

Having thus described my said invention, what I claim as new, and desire to secure by United States Letters Patent, is—

1. In a machine for concentrating ores, the combination of a supporting-standard and a vibrating apron pivoted to an agitator, said agitator comprising an open-sided concaved trunk provided with a discharge-rod and a revolving spiked drum and an agitating spiked comb, the mineral being forced over said apron and through said trunk, substantially as and for the purpose set forth.

2. The combination, with the supporting-standard, of an open-sided agitator-trunk, a vibrating apron pivoted to said agitator, said apron being held within a suitable frame and supported upon a cam-shaft in belt connection with the agitator mechanism and adapted to vibrate said apron, and rotary fans mounted above and below said vibrating apron, adapted to direct an air-blast upon the mineral in its passage from the apron to the agitator-trunk, substantially as shown, and for the purpose set forth.

3. The combination, with the supporting-standard, of an open-sided agitator-trunk, a vibrating apron pivoted to said agitator, said apron being held within a suitable frame and supported upon a cam-shaft in belt connection with the agitator mechanism and adapted to vibrate said apron, rotary fans mounted above and below said vibrating apron, adapted to direct an air-blast upon the mineral in its passage over said apron to the agitator-trunk, said agitator being provided with a concave bottom, a discharge-valve within said bottom, and a rotary spiked drum working within said trunk and above an oscillating spiked comb, said cam-shaft, drum, and fans being in proper belt connection, all substantially as and for the purpose set forth.

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

GEORGE CARSON.

Witnesses:
JOHN P. HESS,
JOS. A. SHOEMAKER.