

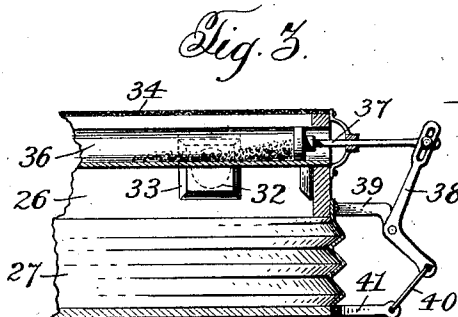
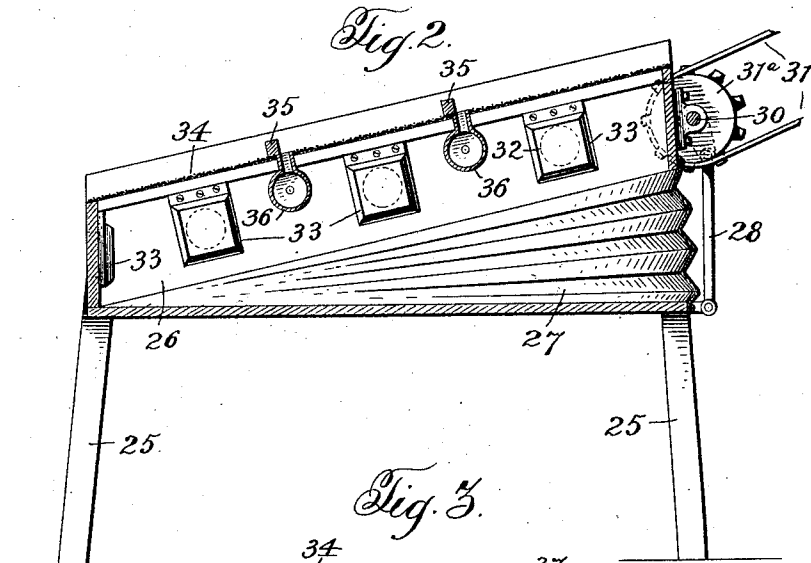
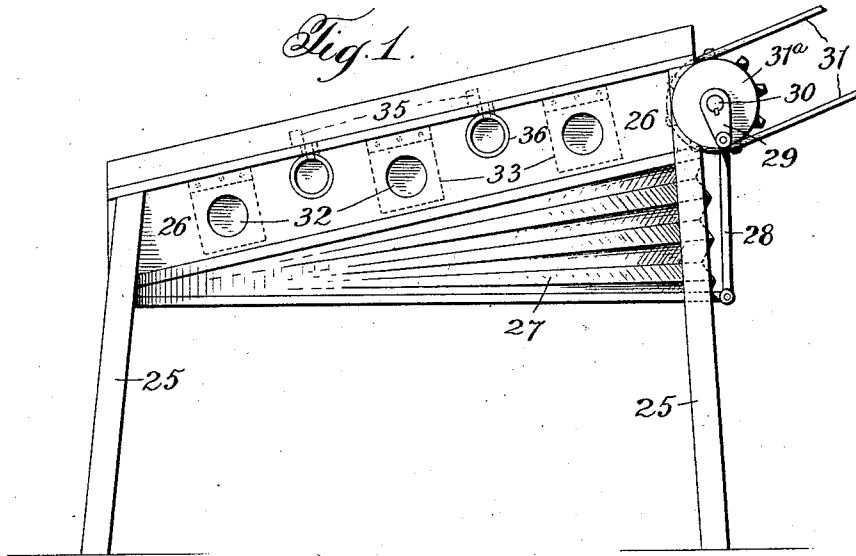
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SEPARATOR.

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1,059,068.

Patented Apr. 15, 1913.



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UNITED STATES PATENT OFFICE.

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SEPARATOR.

1,059,068.

Specification of Letters Patent.

Patented Apr. 15, 1913.

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To all whom it may concern:

Be it known that I, MITTS QUENNER, a citizen of the United States, residing at Santa Ana, Sonora, Mexico, have invented certain new and useful Improvements in Separators, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to improvements in separators and has for its object the provision of a machine primarily designed for the treatment of pulverized metal bearing material in a dry state, to recover precious metals, etc., although it will be apparent to those skilled in the art that the machine is capable of other similar uses.

My improved separator is adapted for use alone, or as an ancillary feature of a combined crusher or pulverizer and separator, as illustrated for example in my co-pending application Serial No. 479,937, filed Feb. 25, 1909, of which latter application the present case is a division.

Important features of a convenient embodiment of the invention comprise a supporting surface, preferably inclined, formed of foraminated material over which the pulverized material is fed, in combination with means for forcing air upwardly through the foraminated support and material thereon, and receiving pockets arranged in operative relation to the support and opening to the apertures therein from therebeneath; and preferably means for positively ejecting the accumulated precious metals, etc., from said receiving pockets.

The novel details in the construction and arrangement of parts of the separator will be apparent from the detailed description and claims hereinafter contained when read in connection with the accompanying drawings forming part hereof and wherein the before mentioned convenient embodiment of the invention is illustrated.

In the drawings: Figure 1 is a side elevation of the separator, Fig. 2 is a longitudinal sectional view of the same, and Fig. 3 is a transverse section taken on a line through one of the receiving pockets.

Referring more specifically to the drawings wherein like reference characters designate corresponding parts in the several views, 26 represents a suitable box or casing

which may be of any desired size, dependent upon the character of the material to be treated and the predetermined capacity of the machine. This casing is open at its bottom, being connected around its marginal portions with a bellows 27.

25 are supporting legs for the casing 26, the legs at the feed end of the device being longer than those at the discharge end to give a proper inclination to the supporting or upper surface 34 of the casing, the latter being formed of foraminated material and provided with riffles 35 arranged transversely thereof and at suitable distances apart.

The bellows is operated by means of pitmen 28 connected to cranks 29 mounted to rotate with a transverse shaft 30, the latter being journaled in bearings at the feed end of the box or casing 26. This shaft 30 may be driven in any desired manner, conveniently through the means of a sprocket chain 31 driven from any suitable source of power engaging a sprocket 31^a on the shaft 30.

The inclined box or casing 26 is provided with a series of air inlet openings 32 covered by inwardly opening valves 33 conveniently of a flat type covered with canvas, or of any other desired type or construction. These valves open and close in consonance with the operation of the bellows, as is apparent. In the expanding movement of the bellows the valves open and the bellows and box are charged with air, while in the contracting movement of the bellows, said air is forced upwardly through the supporting screen 34 and through the material thereon. As the particles pass downwardly over the upper surface of the supporting screen 34, they are met by the currents of air and engage the riffles 35.

In advance of each riffle 35 there is a transversely arranged tube 36 supported within the box or casing immediately below the screen and having an open communication throughout the length of the tube with the apertures in the supporting screen leading through the latter to the material thereabove, as clearly illustrated in Fig. 2. The tubes 36 just referred to constitute receiving pockets into which the heavier materials fall, the accumulated materials being finally discharged from these pockets at the rear

ends thereof, it being understood that the tubes are open at both ends.

Plungers 37 are mounted to work in the forward ends of the receiving pockets or tubes, one plunger being provided for each tube and arranged and operated as illustrated in Fig. 3 where it will be seen that a slotted bell crank lever 38, fulcrumed on a support 39 secured to the forward side of the box or casing 26, operatively connects the rod or stem of the plunger with a link 40 engaging an arm 41 carried by the bottom of the bellows 27. It will thus be seen that as the bellows is alternately inflated and deflated the bell crank levers 38 will be correspondingly rocked, which latter in turn effects the desired reciprocation of the plungers 37 within the receiving pockets 36 to force the particles of gold or other accumulated material through the tubes and discharge the same from the concentrator.

While I have herein illustrated a specific form of apparatus capable of carrying my invention into practical effect, it is obvious that the invention is capable of embodiment in other forms and devices.

I claim:—

1. In an apparatus of the character described, a concentrator comprising a casing, a screen secured in the casing forming a concentrating table, a bellows for establishing upwardly flowing currents of air through the screen, a riffle secured across the screen, a transversely extending tube mounted in the casing below the screen and having communication with the upper face thereof in advance of the riffle, said tube being open at both ends, a plunger mounted to reciprocate in the tube to force the concentrate from the tube, a bell crank, one arm of which is secured to said plunger, a support secured to the casing on which the bell crank is mounted, and means for reciprocating said bell crank from the bellows mechanism.

2. A concentrator comprising a table, said table being composed of open mesh fabric transversely slotted at intervals, a casing upon which the table is mounted, a bellows connected with the casing, transverse cylindrical pockets located below the table having slots alining with the slots in the table, discharging pistons in each of said pockets, a sprocket wheel mounted on the casing, a link and crank connecting said sprocket wheel with the bellows to operate the latter, and bell crank levers, one for each of said discharge pistons, one arm of each of said levers being connected to the movable face of the bellows.

3. In an apparatus of the character described, a concentrator comprising a casing having an open bottom, a screen secured to said casing, bellows secured to the casing at the bottom thereof, a riffle secured to the

casing above and in contact with the upper face of the screen, a tube extending transversely through the casing below the screen and in communication with the upper face thereof and in advance of the riffle, a plunger mounted to reciprocate in said tube, a bell crank, one arm of which is secured to the plunger, a support secured to the casing and on which the bell crank is fulcrumed, an arm extending upwardly from the bellows, and a link connecting said arm with the other arm of the bell crank.

4. In an apparatus of the character described, a concentrator comprising a casing, a screen secured in the casing, means for establishing upwardly flowing currents of air through the screen, a riffle secured to the screen, a transversely extending tube mounted in the casing below the screen having communication with the upper face thereof in advance of the riffle, a plunger mounted to reciprocate in said tube, and means for automatically reciprocating said plunger.

5. In an apparatus of the character described, a concentrator comprising a casing, a screen secured to said casing, means for establishing upwardly flowing currents of air through the screen, riffles secured to the casing above and in contact with the upper face of the screen, collecting pockets secured in the casing in advance of the riffles and in communication with the upper face of the screen, and means for automatically ejecting material from said pockets.

6. In an apparatus of the character described, a concentrator formed with an open bottom, a bellows member connected to the casing underlying the bottom thereof, the casing being formed with air inlet openings leading from the exterior of the casing and valves for said openings, a screen secured to the casing above said inlet openings, riffles secured to the casing above and in contact with the screen, and collecting boxes interposed between said bellows member and screen above the bellows and secured in the casing below the screen and in communication with the upper face of the screen in advance of the riffles.

7. A separator of the character described comprising a foraminated support for the material, approximately tubular collecting pockets having closed bottoms arranged immediately below said support and adapted to receive material directly therefrom, in combination with means for creating currents of air upwardly through the support and the material thereon while preventing accumulation of material in said means, and means acting automatically to positively eject the accumulated material from the pockets.

8. A separator of the character described comprising a foraminated support for the material, approximately tubular collecting

pockets having closed bottoms arranged immediately below said support and adapted to receive material directly therethrough, means for creating currents of air upwardly through the support and the material thereon while preventing accumulation of material in said means, in combination with riffles upon said support adjoining the points of discharge to the pockets, and means acting automatically to positively eject the accumulated material from the pockets.

9. A separator of the character described comprising a foraminated support for the material, approximately tubular pockets arranged immediately below said support and adapted to receive material therefrom, in combination with means for creating currents of air upwardly through the support and the material thereon, means for positively ejecting the accumulated material from the pockets, and a common means for operating the ejecting means and the air forcing means.

10. A separator of the character described comprising a foraminated support for the material, approximately tubular pockets arranged immediately below said support and adapted to receive material therefrom, in combination with bellows for creating currents of air upwardly through the support and the material thereon, means for positively ejecting the accumulated material from the pockets, and a common means for operating the ejecting means and the bellows.

11. A separator of the character described comprising a foraminated support for the material, a frame beneath said support having a valved air inlet therein, an approximately tubular receiving pocket within said frame arranged below the support adapted to receive material there-through, a bellows connected to the marginal portions of said frame arranged below the support and pockets, means for operating the bellows to force currents of air through the support and material thereon, in combination with means for positively

ejecting the accumulated material from the pocket.

12. A separator of the character described comprising a foraminated support for the material, a frame beneath said support having a valved air inlet therein, an approximately tubular receiving pocket within said frame arranged below the support adapted to receive material therefrom, a bellows connected to the marginal portions of said frame arranged below the support and pockets, and means for operating the bellows to force currents of air through the support and material thereon, in combination with means for positively ejecting the accumulated material from the pocket, said last mentioned means including connections enabling the actuation thereof by the same means which operates the bellows.

13. A separator of the character described comprising a foraminated support for the material, approximately tubular collecting pockets arranged in planes parallel to the foraminated support and immediately therebeneath, said tubular pockets opening directly through the foraminated support, said pockets discharging laterally beyond one side of the support, substantially as and for the purpose described.

14. In an apparatus of the character described, a concentrator comprising a casing, a screen secured to said casing, means below the casing for establishing upwardly flowing currents of air through the screen, riffles on the upper face of the screen, collecting pockets interposed between said means and screen in advance of the riffles and in communication with the upper face of the screen, said collecting pockets discharging laterally beyond one side of the concentrator, and means for automatically ejecting the material from said pockets.

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

MITTS QUENNER.

Witnesses:

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THERON RICHARDSON.