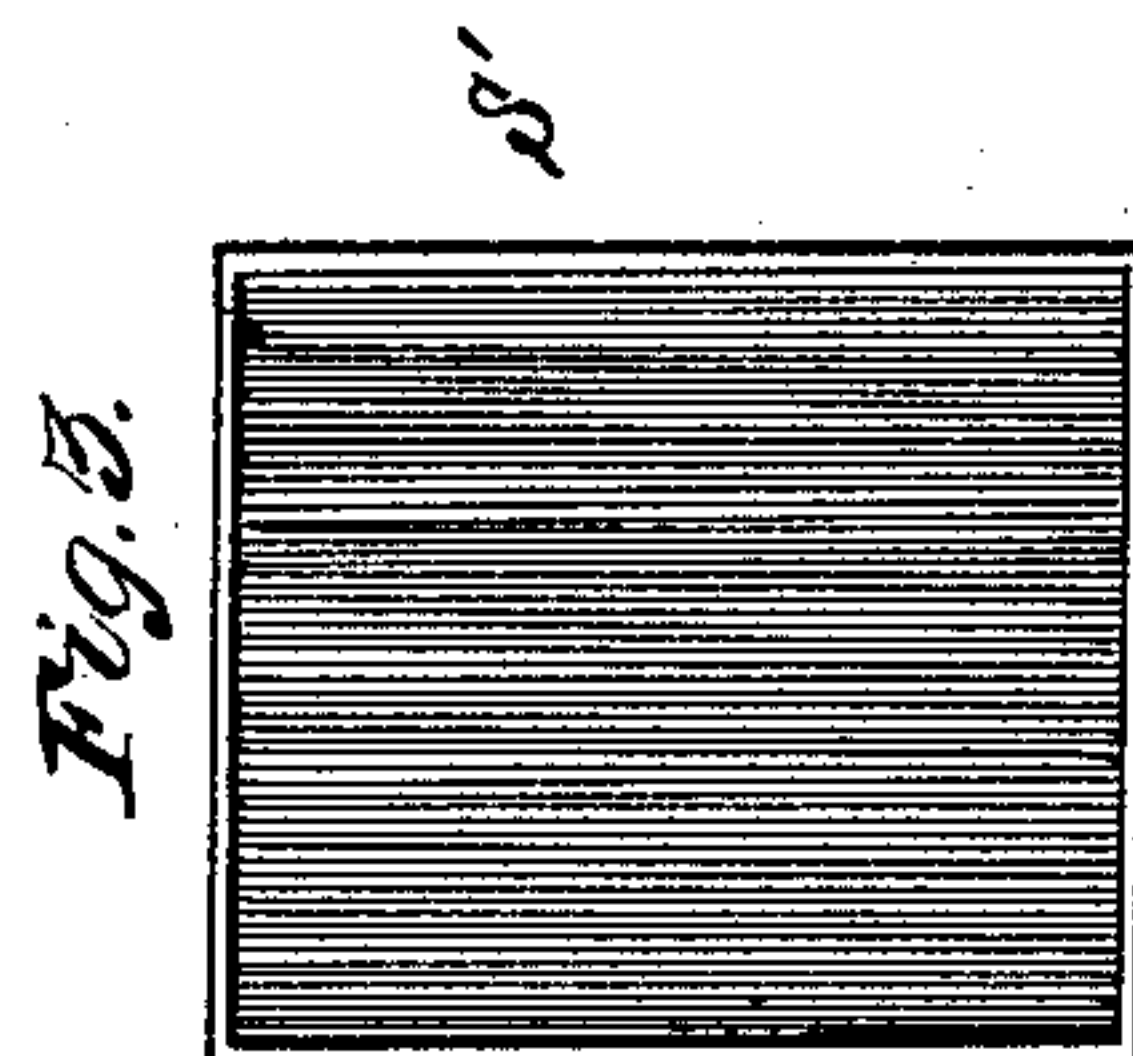
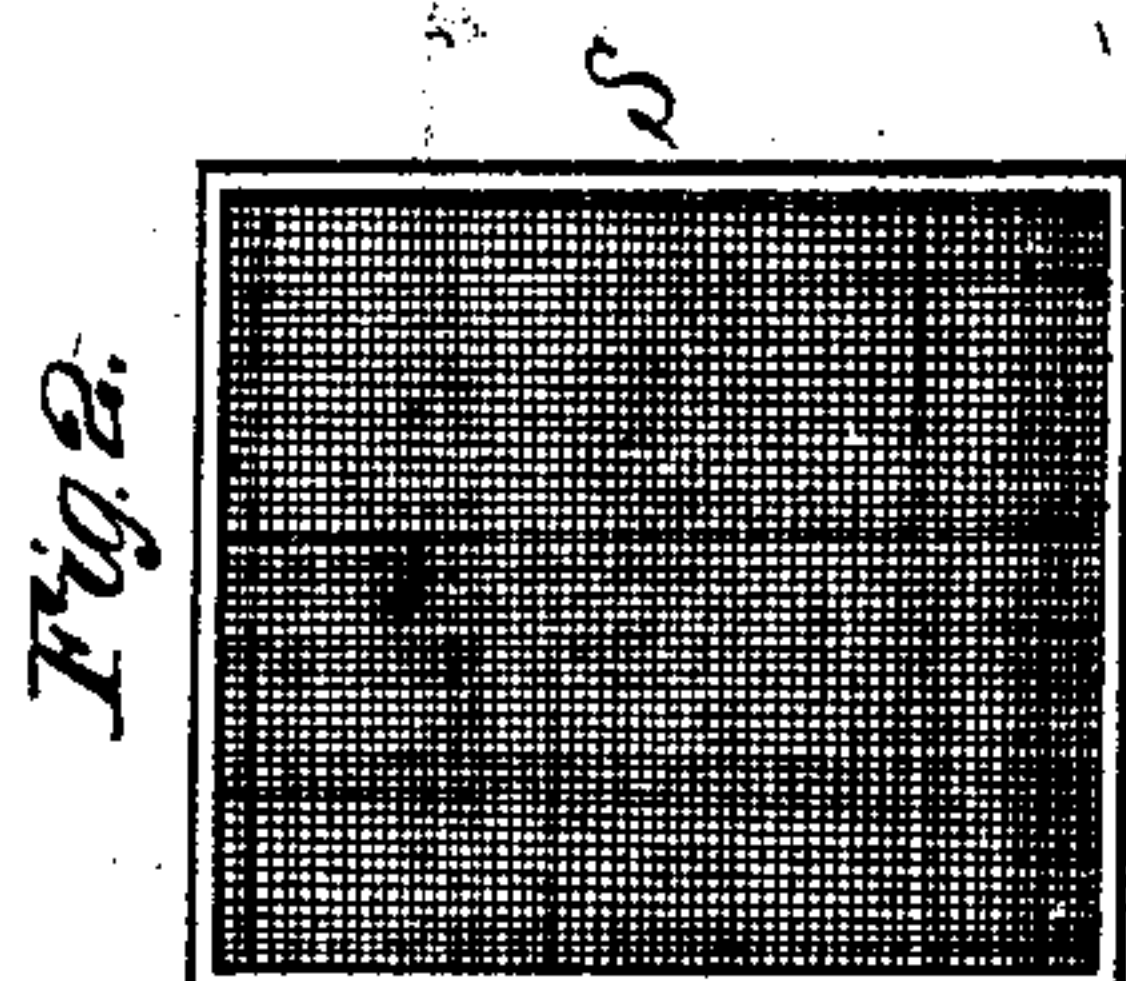
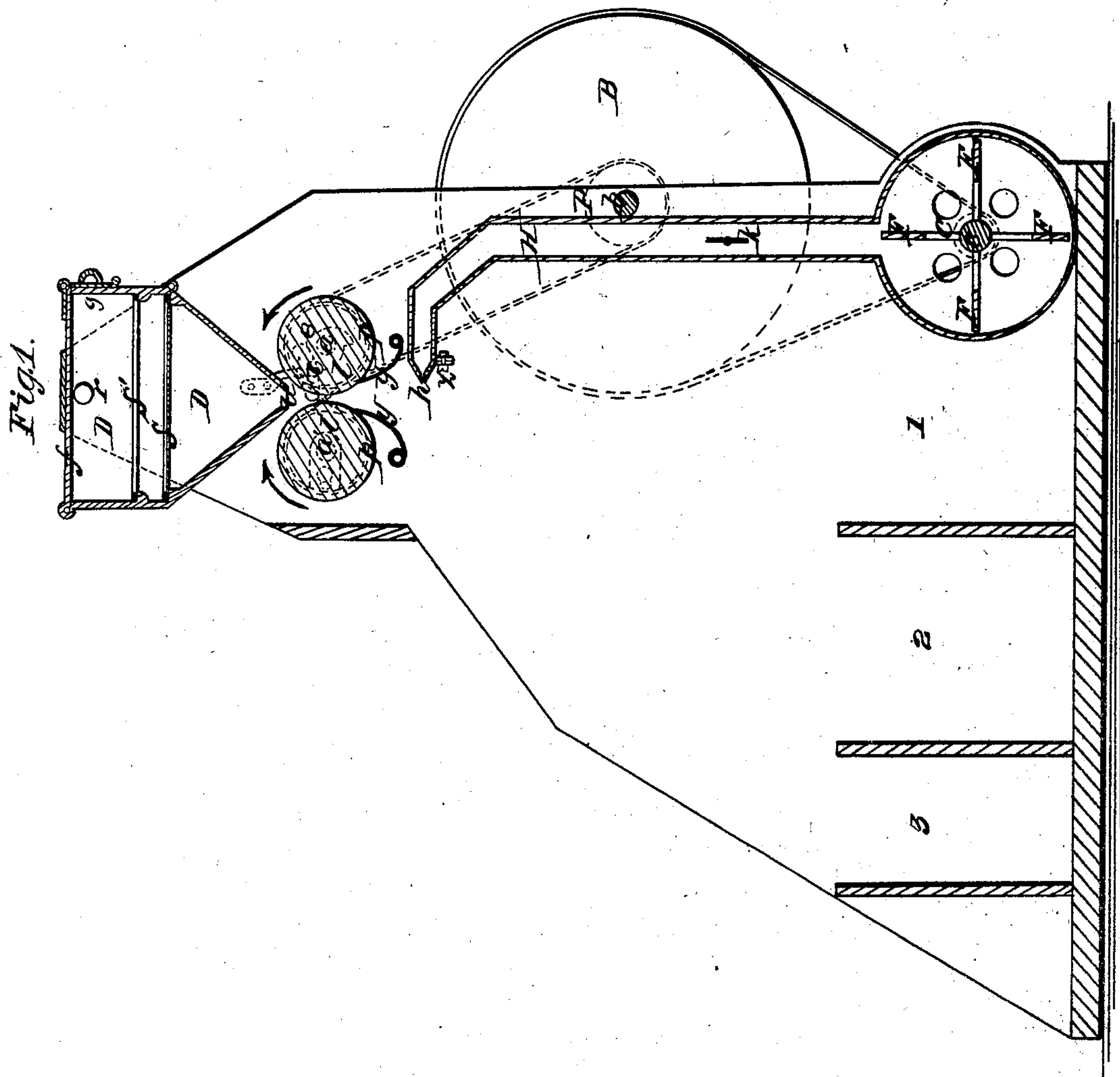


M. C. GRITZNER.
WINNOWING GOLD SEPARATOR.

No. 10,272.

Patented Nov. 29, 1853.



UNITED STATES PATENT OFFICE.

M. C. GRITZNER, OF WASHINGTON, DISTRICT OF COLUMBIA.

GOLD-SEPARATOR.

Specification of Letters Patent No. 10,272, dated November 29, 1853.

To all whom it may concern:

Be it known that I, M. C. GRITZNER, of Washington city, in the District of Columbia, have invented a new and improved mode of separating precious metals from the ores, sand, earth, &c., in which they are contained or with which they are mixed up; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings and to the letters of reference marked thereon.

The nature of my invention consists in the arrangement of two or more screens—one having oblong and the other square meshes—the square meshes to be of the same size of the short diameter of the oblong meshes, for the purpose of separating and retaining the leaf or flake gold, and permitting the balance of the material to be subjected to a blast in uniform or nearly uniform sizes, so as to be differently operated upon by their different specific gravities; also, in the interposition of guide rollers or their equivalents between the shaking hopper and the blast, for the purpose of guiding or bringing the material in a proper manner to the blast.

In the apparatus as represented by the accompanying model and drawings, the driving power is applied to axis *b* on which sit two band wheels *P* and *B*. From the large band wheel *B* the motion is transferred to a small band wheel *C* which sits on the axis *c* of the fan *F*. From the smaller band wheel *P* the motion is transferred to a band wheel *p* and from this by means of a cross band to a band wheel *p'*. On the axles *a* and *a'* of these band wheels *p* and *p'* sit two cylinders *l* and *l'* the distance of which from each other can be changed the axis *a'* being adjustable in horizontal slots. On the axis *a* sits also a cam *e* the teeth of which are to strike against a pin *i*. This pin *i* is attached to the box *D D* which is suspended on journals *r*. The cover and rear part of this box are hinged and can be opened, and sieves *S* and *S'*, which the box contains, can be taken out. The inclined bottom boards of said box form a longitudinal aperture *u* on their lower end. The fan *F* is inclosed by a cylinder which connects along its whole length with a channel *H*. This channel (which can be partially or wholly shut by turning the valve board *h*) ends in a narrow mouth piece *h* of the same longitudinal dimension

as the channel and the fan-cylinder. The width of this mouth piece can be adjusted by screws *z*; its front edge is a little behind a vertical line passing through the opening which is formed between the two cylinders *l* and *l'*. The bottom of the apparatus in front of the fan-cylinder is divided into spaces 1, 2, 3. The dividing boards between these spaces are to be adjustable in their horizontal distance from each other.

The operation of the machine is as follows: The sand or crushed ore is put in the box *D* on the top of sieve *S'*. This box being set in a vibratory motion by means of cam *e* and pin *i* all particles (not thicker than the wires of sieve *S'* are distant from each other) will fall through sieve *S'* on sieve *S*. The flat leaf-like particles, which will pass through the oblong apertures of sieve *S'*, unable to pass through the square holes of sieve *S* will remain on said sieve *S*. The other particles which pass through the square holes of sieve *S* will be approximately of equal size. They fall through the aperture *u* and pass between the two cylinders *l l'*, which have the purpose to guide all the particles in a vertical plane parallel to the mouthpiece *h*. When arriving in front of this mouthpiece they will be blown out in a horizontal direction in consequence of the air current which the revolving fan *F* causes to pass through the channel *H* and the mouthpiece *h*. The particles being approximately of equal size and there being a considerable difference between the specific gravity of metal and stone, the metal will be least deviated from its vertical downward motion and stones, etc., will fly farthest. Therefore the space 1 will receive the pure metal, space 2 the mixed particles, and space 3 the particles which contain no metal. When nothing more passes through sieve *S*, both sieves are to be taken out of the box with the material left on them. The material on sieve *S* will be almost pure metal and may be added to the contents of space 1. The material left on sieve *S'* is to be transferred on a sieve with oblong openings coarser than *S'*. This sieve is then inserted into the box *D* in place of *S'* together with a sieve below of corresponding square holes coarser than *S*, and the operation is repeated after the dividing boards between 1, 2, and 3 have been adjusted for these coarser particles, which of course will not fly out so far. It is evident that the motion of axis *b*

must be uniform and for nice work some contrivance for instance governor balls with a finger and a scale will have to be employed in order that a uniform velocity may be attained by revolving the axis in such a way that the finger always points to the same point of the scale.

Instead of successively inserting the pairs of sieves of different fineness they may be arranged above each other in a box like D, the finest pair underneath.

Instead of making the divisions 1, 2, 3 adjustable, said divisions may be stationary and the blast adjustable and accomplish the same end.

Having thus fully described the nature of my invention what I claim therein as new and desire to secure by Letters Patent, is—

1. The arrangement of the screens S S', (two or more) one having oblong and the

other square meshes—the square meshes being of the same size of the short diameters of the oblong meshes, for the purpose of separating and retaining the leaf or flake gold, and permitting the balance of the material to be subjected to the blast in uniform or nearly uniform sizes, so as to be differently operated upon, by their different specific gravities, substantially as described.

2. I also claim the interposition of the guide rollers or their equivalents between the shaking hopper and the blast, for the purpose of guiding or bringing the material in a proper manner to the blast, substantially as described.

M. C. GRITZNER.

Witnesses:

A. B. STOUGHTON,
SAML. GRUBB.