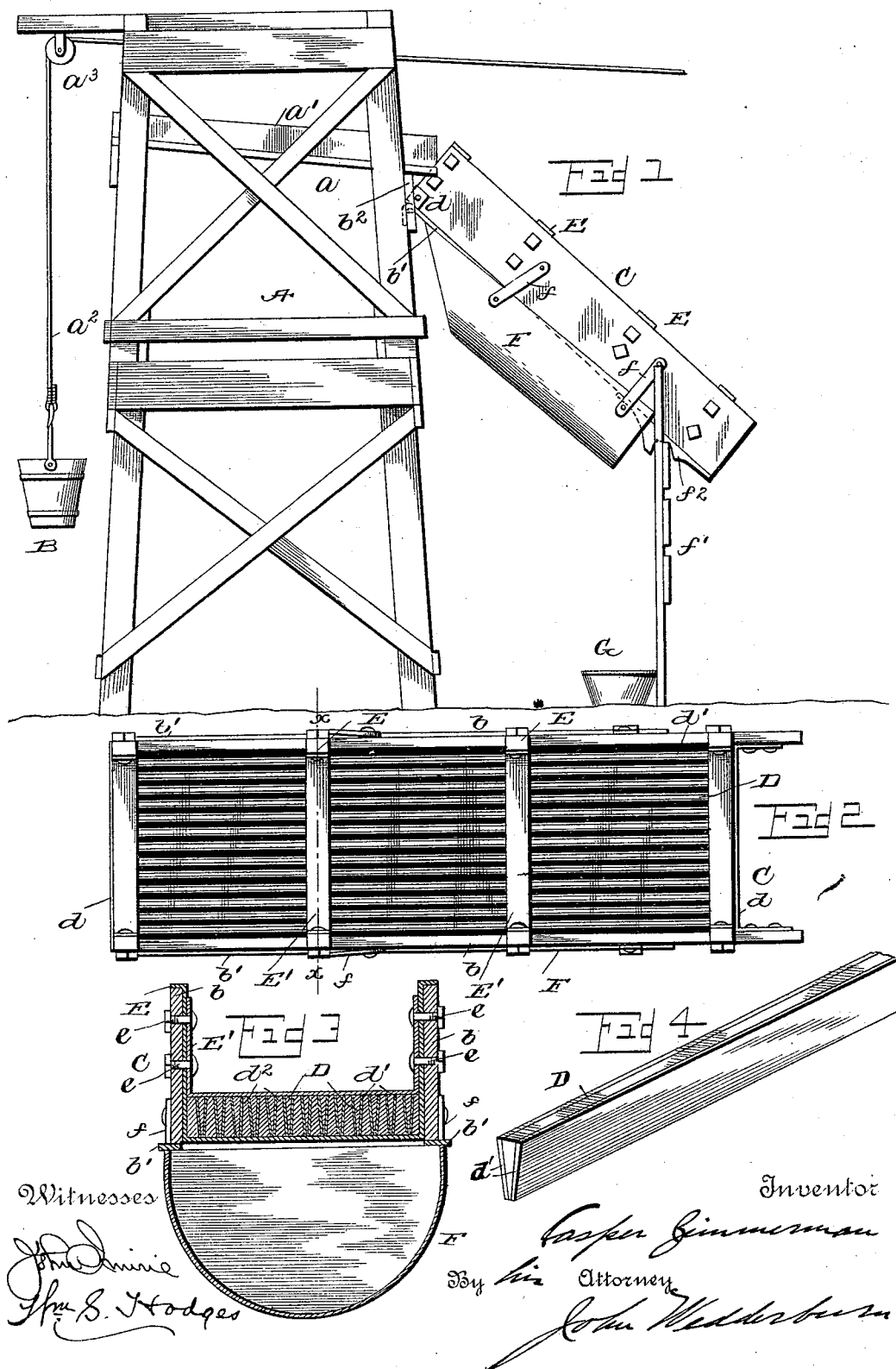


C. ZIMMERMAN.
SIFTER OR SEPARATOR.

Patented Mar. 7, 1893.



UNITED STATES PATENT OFFICE.

CASPER ZIMMERMAN, OF DENVER, COLORADO.

SIFTER OR SEPARATOR.

SPECIFICATION forming part of Letters Patent No. 493,142, dated March 7, 1893.

Application filed May 3, 1892. Serial No. 431,707. (No model.)

To all whom it may concern.

Be it known that I, CASPER ZIMMERMAN, of Denver, in the county of Arapahoe and State of Colorado, have invented certain new and useful Improvements in Sifters or Separators; and I do hereby declare the following to be 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.

This invention relates to certain new and useful improvements in mining machines, and has for its object the production of a new and highly efficient machine of this class for mining gold and other precious ores whereby the ore is readily and easily separated in a dry state from the pay gravel with but a minimum waste.

The invention comprises an inclined sieve having a lower receiving trough and provided with a series of parallel bars spaced apart and having opposite inclined faces, said bars being widened at their upper portions and narrowed at the bottom.

The invention further consists in a sieve having a lower trough, a series of bars having inclined sides provided with metallic strips, spacing blocks placed between said bars at periodical points, and bands or straps inclosing said bars and spacing blocks both above and below, the upper bands or straps serving to impede the ore in its passage, both of said bands or straps being connected at their ends to the parallel sides of the sifter, substantially as hereinafter fully set forth and particularly pointed out in the claims.

In the accompanying drawings:—Figure 1 is a view in side elevation of my improved mining machine. Fig. 2 is a plan view of the sifter or separator. Fig. 3 is a transverse sectional view thereof on the line $x-x$, Fig. 2. Fig. 4 is a view of a portion of one of the bars.

Referring to the drawings, A designates the frame-work or staging of ordinary construction, preferably formed in sections so that its height can be regulated. In the upper portion of this frame-work or staging is an inclined feed chute a having side guide rails a' .

B is a hoisting bucket designed to be lowered into the point of excavation and raised therefrom when filled by means of a rope or chain a^2 passed over a sheave-wheel or pul-

ley a^3 suspended from a top cross-bar of frame-work A, the other end of said rope or chain being connected to the windlass of any suitable engine or motor (not shown).

C designates my improved sifter or separator, and b, b , parallel side-bars or boards thereof, to the undersides of which are secured hooked plates b' designed to be placed in engagement with a cross-bar b^2 of frame-work A at a point just below the discharge end of feed chute a . These side-bars or boards are braced or held together at their ends by strap irons d .

Between the side-bars or boards of the sifter or separator is a series of spaced apart bars D, which extend throughout the length of the sifter or separator, the length of the latter being regulated by the extent of the incline where the machine is located. Each of these bars is of approximately V-shape in cross-section, and to their sides are secured metallic strips or plates d' to prevent the gravel or stone from wearing on said bars. These bars which constitute the bottom of the sifter or separator are spaced apart at periodical points by suitable spacing blocks d^2 , which conform to the shape of the bars D. At the points of location of these spacing blocks the bars D and said blocks are supported by corresponding U-shape plates E, E', the former passing beneath or over the underside of said bars and blocks and having its vertical ends bearing against the inner sides of boards b , their extreme upper ends being flanged so as to rest on the upper edges of said boards. The U-shape plate E' is passed over the upper surfaces of bars D and the spacing blocks, and their vertical ends are held against the vertical ends of plates E by means of nutted bolts e which are passed through said plates and coincident holes in side-boards b . The upper U-shape plates E' in addition to holding the separating bars and blocks in place also serve as checks to prevent the ore and gravel from sliding continuously down the inclined plane and cause such ore and gravel to turn upon coming in contact therewith, thus aiding in the separation of the ore.

F designates a trough of approximately U-shape form, in cross-section, suspended by straps f from the side-boards b of sifter or separator C. This trough extends beneath

the separating bars D throughout the length thereof to a point near the outer, lower end, of the sifter or separator, and is designed to receive the ore separated from the pay gravel.

- 5 This sifter or separator can be supported at its outer end by any suitable means, but I prefer to employ a frame f' upon the top cross-bar of which the end of said sieve or separator will rest, grooved plates f^2 being attached
10 to the side-boards b to hug the upper cross-bar of said frame. The inclination of the sifter or separator will depend upon the condition of the pay-gravel. If the latter be damp and sticky a greater pitch or inclina-
15 tion should be given the sieve or separator, and a lesser inclination when the gravel is dry.

The pay-gravel to be treated is elevated by means of the hoisting bucket, and upon being
20 dumped onto the inclined feed chute will pass on to the inclined sifter or separator, and in its travel over the latter the ore will be separated and fall into the trough beneath, from which latter it will pass into a pan G located
25 beneath the discharge end of said trough at a point between frame-work A and supporting frame f' . The gravel or unsifted matter will pass off the outer projecting end of the sifter or separator.

- 30 The advantages of my invention are apparent to those skilled in the art to which it appertains, and it will be especially observed that no stream or supply of water is necessary to effect the separation of the ore, and that in
35 the single passage of the pay gravel over the inclined surface of the sifter or separator the gold or other precious metal will be separated from the gravel and collected in a suitable pan by which it can be conveyed to an amal-
40 gamator, not shown. It will also be observed

that by shaping the bars of the sifter or separator as described, the thorough sifting of the material is effected, and said bars are protected from wear. It will be further observed
45 that by placing the upper straps of the spaced apart bars over the top-surfaces of the latter the agitation of the gravel and the separation of the ore are greatly aided.

I claim as my invention—

1. As an improvement in mining machines, 50 the sifter or separator herein-described having a series of spaced-apart bars provided with metallic plates on their sides, spacing blocks located between said bars, and upper and lower plates extending across said bars 55 and holding said blocks as set forth.

2. As an improvement in mining machines, the sifter or separator herein-described, hav- 60 ing a series of bars of approximate V-shape, said bars being provided with metallic plates on their sides, and the upper and lower plates attached to said sifter or separator and sup-
porting said series of bars as set forth.

3. As an improvement in mining machines, the sifter or separator herein-described com- 65 prising the parallel side-boards, the series of bars between said side-boards, the spacing blocks located between said bars, and the upper and lower U-shape plates supporting said bars and blocks and having their vertical ends 70 secured to said side-boards, and the trough beneath said sifter or separator to which it is connected, substantially as set forth.

In testimony whereof I have signed this specification in the presence of two subscrib- 75 ing witnesses.

CASPER ZIMMERMAN.

Witnesses:

WM. H. ANDREW,
V. J. DOLEZAL.