

No. 743,413.

PATENTED NOV. 10, 1903.

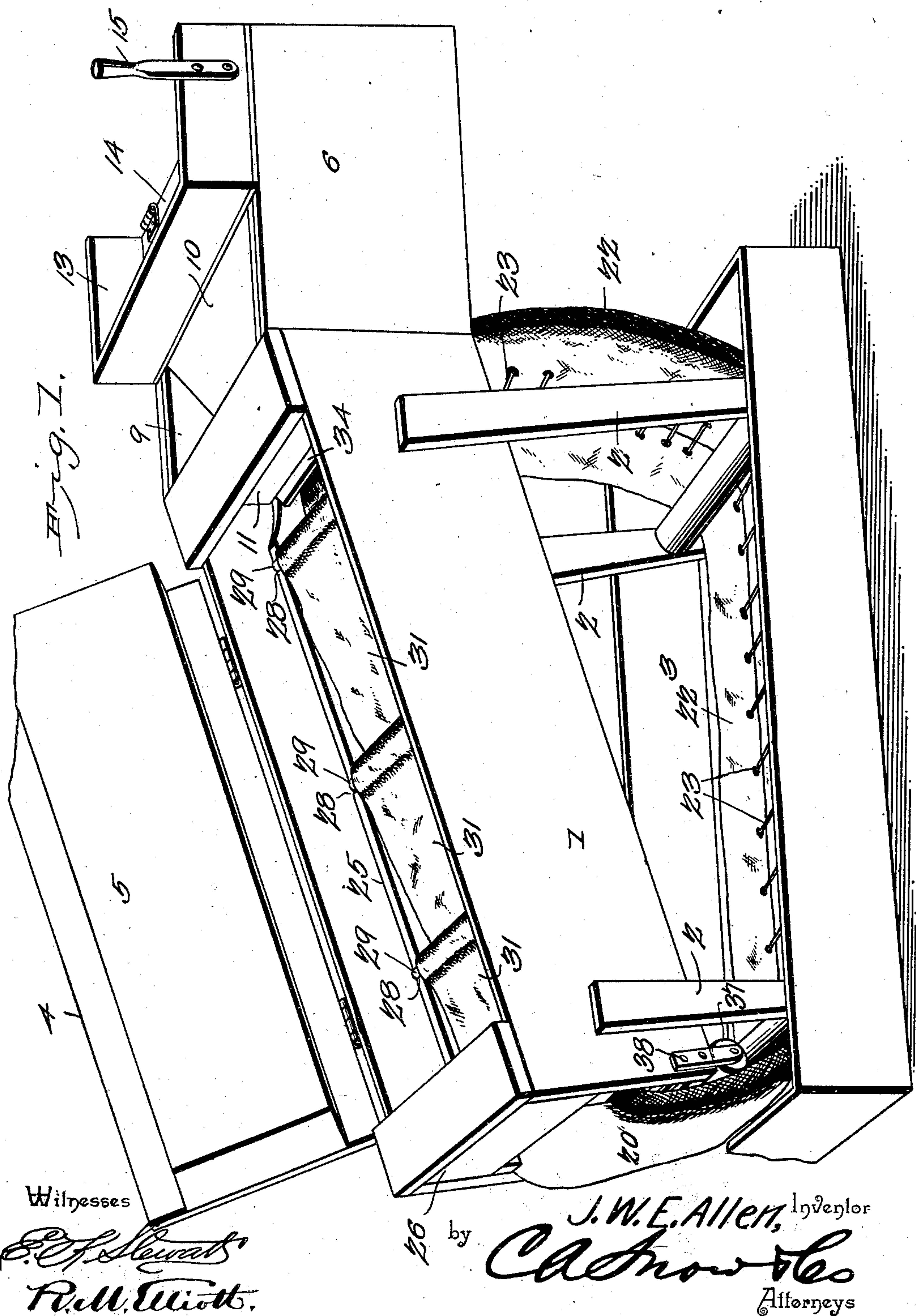
J. W. E. ALLEN.

ORE SEPARATOR.

APPLICATION FILED APR. 14, 1902.

NO MODEL.

2 SHEETS—SHEET 1.



Witnesses

E. F. Lewis
R. M. Smith.

by

J. W. E. Allen, Inventor

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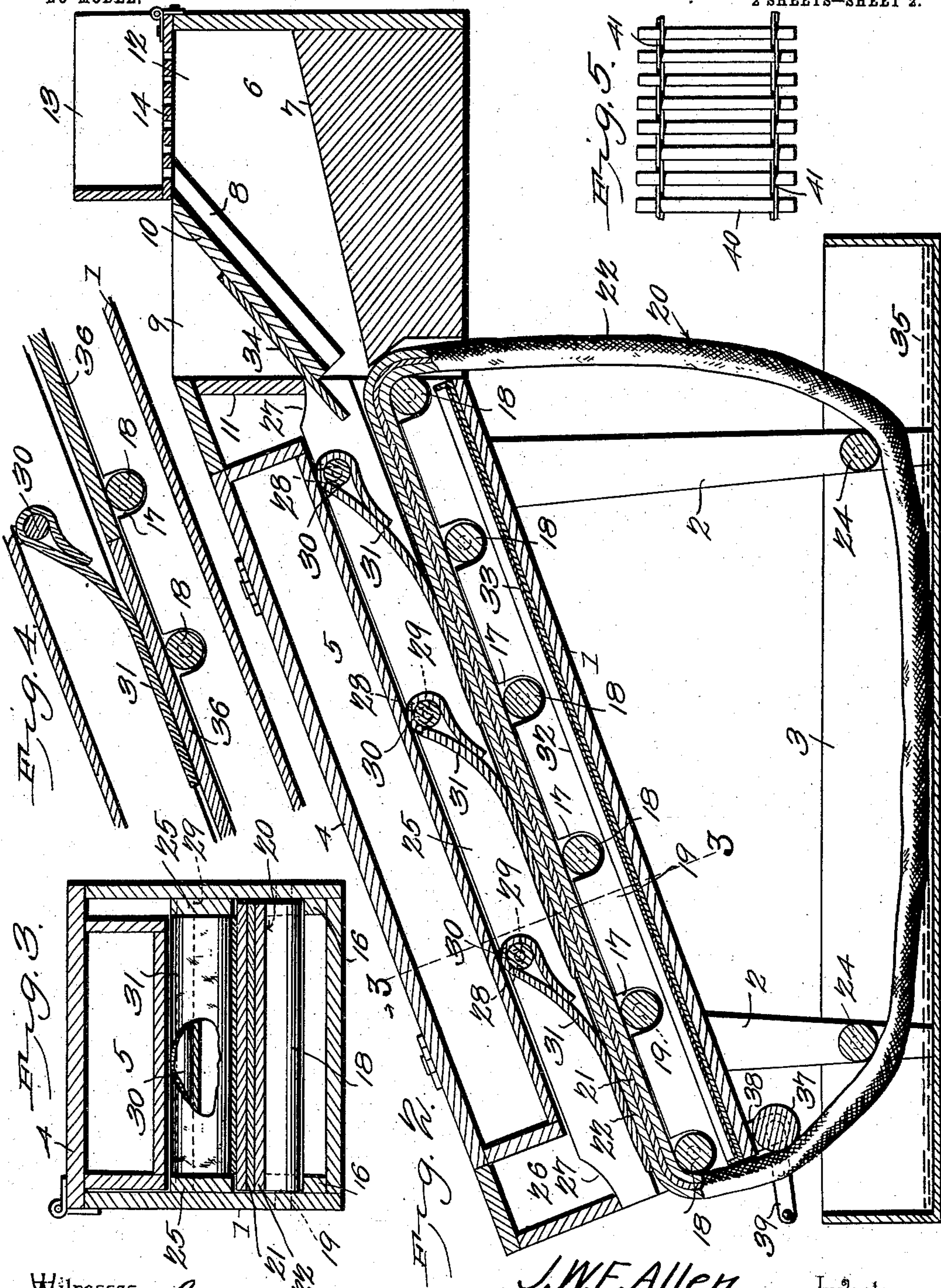
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E. J. Edwards
R. M. Allen

J. W. E. Allen, Inventor.
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UNITED STATES PATENT OFFICE.

JOSEPH W. E. ALLEN, OF SAN FRANCISCO, CALIFORNIA.

ORE-SEPARATOR.

SPECIFICATION forming part of Letters Patent No. 743,413, dated November 10, 1903.

Application filed April 14, 1902. Serial No. 102,897. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH W. E. ALLEN, a citizen of the United States, residing at San Francisco, in the county of San Francisco and State of California, have invented a new and useful Ore-Separator, of which the following is a specification.

This invention relates to ore-separators.

The object of the invention is in a ready, simple, thoroughly feasible, and practical manner to effect separation of precious metals from auriferous earths or from sand or pulp and at the same time to eliminate black sand and other objectionable substances.

With these and other objects in view, as will appear as the nature of the invention is better understood, the same consists in the novel construction and combination of parts of an ore-separator, as will be hereinafter fully described and claimed.

In the accompanying drawings, forming a part of this specification, and in which like numerals of reference indicate corresponding parts, there is illustrated a form of embodiment of the invention, together with a slightly-modified construction thereof, each capable of carrying the same into practical operation, it being understood that the elements therein exhibited may be varied or changed as to shape, proportion, and exact manner of assemblage without departing from the spirit thereof.

In the drawings, Figure 1 is a view in perspective of a separator constructed in accordance with the present invention. Fig. 2 is a view in vertical longitudinal section. Fig. 3 is a view in transverse section, taken on the line 3 3, Fig. 2, and looking in the direction of the arrow thereon. Fig. 4 is a detail sectional view of a slightly-modified form of apron that may be employed in lieu of that shown in the other figures. Fig. 5 is a detail view of a modified form of apron.

Referring to the drawings, 1 designates an ordinary sluice-box supported by legs 2, preferably at an angle of about twenty-two degrees, the lower ends of the legs being disposed in a tank 3 to contain water and quicksilver for a purpose that will presently appear. The top of the sluice-box is closed by a hinged cover 4, having a depending extension 5, adapted to form a tool-box. The front

or higher end of the sluice-box has secured to it a feed-box 6, having an inclined bottom 7, the sides of the feed-box being converged toward the sluice-box, as shown in Fig. 1, and carry guides 8 and 9, between which is mounted for detachment when desired a throat-plate 10, which terminates approximately in line with the front end 11 of the sluice-box, said end being disposed above the bottom of the feed-box to form a passage-way through which the pulp, sand, or dirt may pass to the sluice-box. By reason of the inclined disposition of the upper surface of the bottom of the feed-box and of the throat-plate there is presented an approximately hopper-shaped throat 12, into which the material to be operated upon and the water will be passed and thence into the sluice-box. Disposed over the throat and hinged to the front wall of the feed-box is a screening-box 13, comprising two ends and a rear side, the front being open. This box is provided with a perforated bottom 14, preferably of metal, the perforations to be of a size to permit ready passage to the throat of sand, pulp, or dirt, but to preclude entrance of gravel and rock. The screening-box is provided with a handle 15, by which it may be dumped to clear it of an accumulation of refuse matter.

Secured to the sides of the sluice-box and extending the length thereof are two strips 16, provided with a plurality of recesses 17, in which are mounted the ends of a plurality of rollers 18, the said ends having pintles 19, journaled in the sides of the sluice-box. These rollers are adapted to support an endless apron 20, comprising a carrier 21, made of leather, rubber, heavy Brussels carpet, or any other material that will have sufficient rigidity not to sag between the rollers 18, and a covering or facing of ribbed woolen fabric, burlap, or blanket 22, which is held in position upon the carrier by a suitable lacing 23. (Shown in Fig. 1.) The carrier has its lower bend or loop passed around two rollers 24, carried by the legs 2 of the sluice-box, and rests or is submerged in the water of the tank 3.

Resting upon the upper face of the apron and parallel with each side of the sluice-box are two cleats 25, which operate to hold the apron taut and are retained in position by

having their terminals project under the ends 11 and 26 of the sluice-box, the said terminals being reduced, as at 27, for this purpose. The cleats are provided in their upper edges with a plurality of recesses or depressions 28, adapted to receive pintles 29, constituting the terminals of rollers 30, of which there are shown in this instance three, although, if preferred, a greater number may be employed. These rollers 30 operate to support floaters or agitators 31, which may be constructed of any suitable material, such as woven woolen fabric or the like, and operate to keep the material upon the carrier constantly stirred up, thereby to prevent the heaviest of the black sand, which for the most part is of iron, from settling upon the apron and causing it to be carried out by the strong current of water, while the gold, platinum, &c., settle upon and are retained by the surface of the apron. In order to catch and retain any fine gold that may pass through or work beyond the apron, and thus settle on the bottom of the sluice-box, the latter has associated with it a pan 32, in which are disposed amalgam plates 33 for catching and retaining this gold.

To prevent the incoming volume of water and pulp from splashing upward and to direct it positively upon the apron, the throat-plate 10 has associated with it a flexible lip 34, preferably of leather, which projects within the sluice-box a sufficient distance to perform the function designed.

In practice the tank 3 will contain a body of quicksilver (indicated by dotted lines at 35) to catch and retain the gold liberated from the apron.

Instead of employing the fabric apron as described, boards 36 may be employed in lieu thereof, as shown in Fig. 6, the boards to be in two pieces of a length when in position to equal that of the sluice-box, thereby to permit of their being readily removed and washed in the tank.

To move the apron through the sluice-box as desired, a feed-roller 37 is associated with the lower end thereof, and preferably beneath the same, and is supported by hangers 38, secured to the sides of the box, a crank 39, secured to one end of the roller, operating to facilitate its turning.

Instead of employing the apron shown in Figs. 1, 2, and 3 the form of apron shown in Fig. 5 may be employed, which consists of lengths or strips of board 40, held associated by interwoven wires or ropes 41.

The operation of the separator is as follows: Pulp, sand, or auriferous earth and water are supplied to the screening-box and the finely-divided matter and water passed through the bottom thereof and into the feed-box and thence onto the apron, the refuse matter—such as rocks, gravel, and the like—being retained by the screening-box. When the

stream of material has been allowed to pass over the upper section of the apron for the desired length of time, the cleats 25 are lifted from their place and the roller 37 is operated to draw a length of apron through the sluice-box equal to the length thereof, thereby presenting a clean surface to the material to be operated upon, and the cleats are then replaced. The section of apron thus drawn through the sluice-box enters the tank, which is of such dimensions that substantially its entire length may be treated, where it can be washed at leisure, the contained quicksilver operating to catch and retain any gold removed therefrom. Thus to effect cleaning of the apron there will be no loss of time other than that necessary to withdraw the length of apron containing the gold and to remove and replace the cleats, the washing of the apron being readily accomplished while the machine is in full operation.

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

1. In an ore-separator, the combination of a frame, an endless apron, rollers supporting the same with its supported portion in an inclined position, and cleats disposed adjacent to the upper edges of the supported portion of the apron to clamp the latter in position.

2. In an ore-separator, the combination with an endless apron, of supporting and clamping means comprising suitably-supported recessed strips having rollers mounted therein, and detachable clamping-strips disposed above the same, the edges of a portion of the apron being held between said supporting-strips and clamping-strips.

3. In an ore-separator, the combination with an apron, of means for intermittently moving the apron, removable means for clamping said apron in place, and agitators carried by the clamping means.

4. In an ore-separator, a normally stationary and manually-operable endless apron, means actuated by the passage of the material through the separator to prevent undesirable matter from settling upon the apron, and amalgam plates extending below the apron and spaced therefrom for catching and retaining any fine gold that works there-through.

5. In an ore-separator, the combination with a sluice-box, of transversely-disposed rollers, an endless apron having a portion of its length disposed on the rollers, detachable cleats for clamping the apron in place, and floaters carried by the cleats.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

JOSEPH W. E. ALLEN.

Witnesses:

A. P. BLACK,
N. E. W. SMITH.