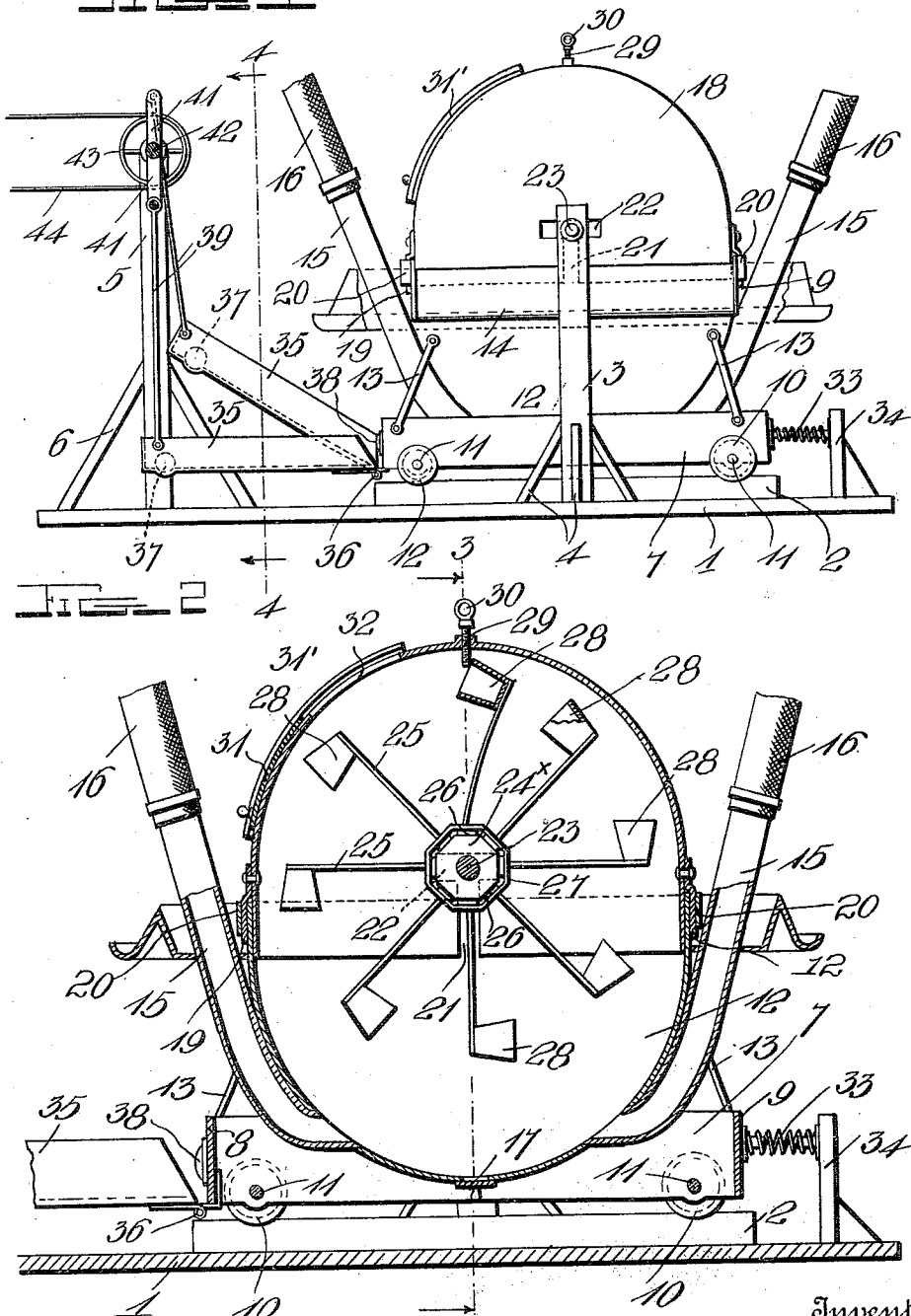


R. L. ROYSE.
CONCENTRATOR AND AMALGAMATOR.
APPLICATION FILED MAY 11, 1910.

979,706.

Patented Dec. 27, 1910.

2 SHEETS-SHEET 1.



Witnesses
A. M. Sauner.

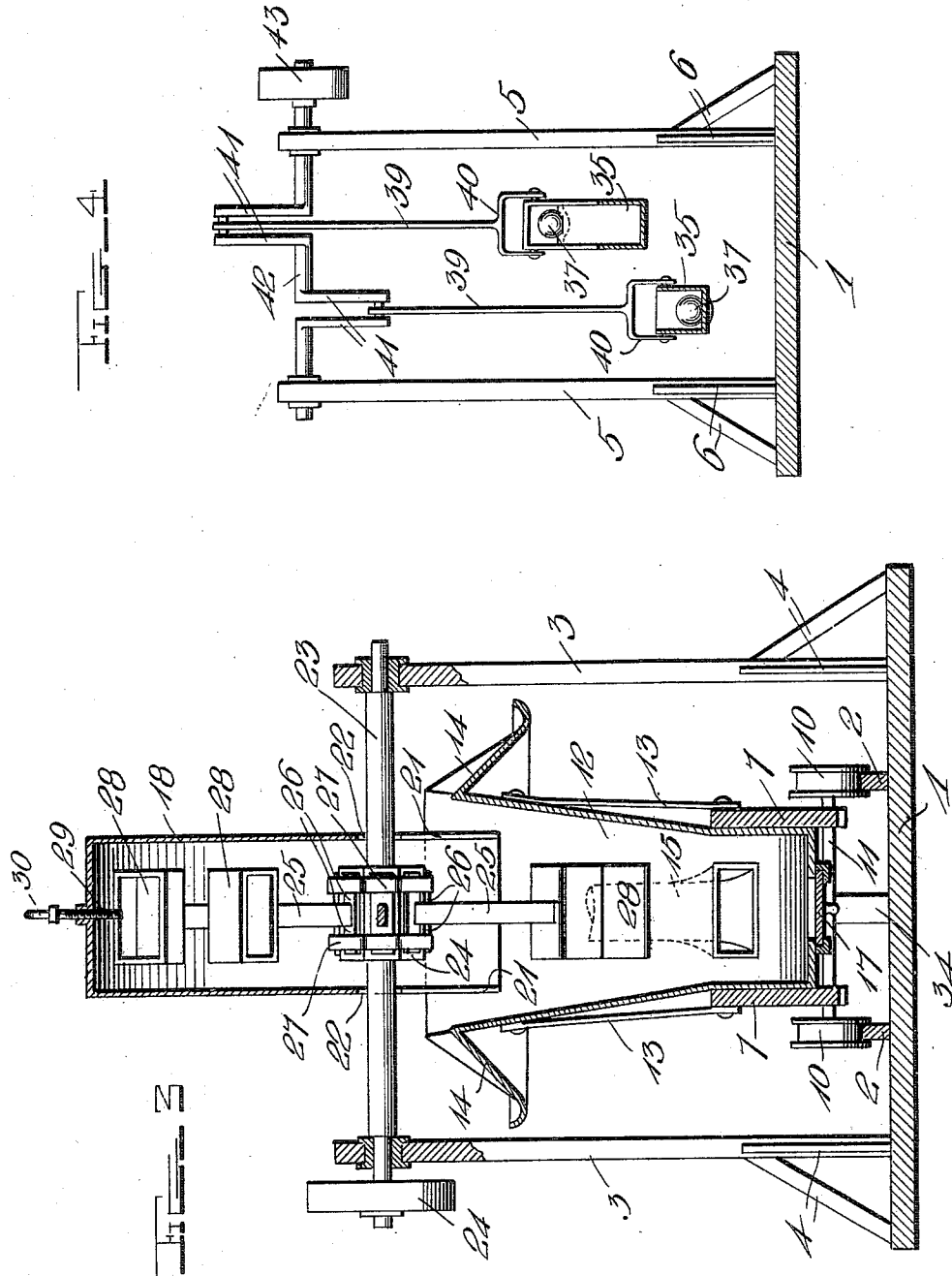
Inventor
Robert L. Royse
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Witnesses

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UNITED STATES PATENT OFFICE.

ROBERT L. ROYSE, OF MARTINSVILLE, INDIANA.

CONCENTRATOR AND AMALGAMATOR.

979,706.

Specification of Letters Patent.

Patented Dec. 27, 1910.

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To all whom it may concern:

Be it known that I, ROBERT L. ROYSE, a citizen of the United States, residing at Martinsville, in the county of Morgan and State of Indiana, have invented certain new and useful Improvements in Concentrators and Amalgamators, of which the following is a specification.

This invention relates to amalgamators and concentrators, and one of the principal objects is to provide simple, reliable and efficient means for separating the fine particles of valuable metals from muddy water and slime and which will thoroughly agitate and carry off the tailings.

Another object of the invention is to provide an amalgamator of simple construction comprising a casing provided with feed pipes for the water at opposite ends thereof so that as the water meets in the center of the casing a vortex is created which thoroughly agitates the liquid, means being also provided for jarring the casing to release the particles of metal from the muddy water and to permit them to settle at the bottom, while the water is carried off as tailings by a revolving wheel provided with a series of buckets.

Still another object of the invention is to provide a device of the character described with a rotating wheel having a series of resilient spokes carrying buckets at their ends for discharging the tailings from the casing, means being provided for retarding the buckets to throw the contents thereof out of the casing.

Another object of the invention is to provide an amalgamator in which a vortex is created at the center of the bottom of the casing to thoroughly agitate the slime and liquid as it enters the apparatus and to provide sufficient space above the vortex for a pool of still water, thus permitting the impalpable particles of the metal to be thrown upward violently into the pool, from which said particles will settle by the jarring action of the apparatus down upon the inclined sides of the amalgamator casing which may be provided with a coat of mercury to arrest the particles.

Still another object of the invention is to provide a tappet mechanism for jarring the casing during the operation of the apparatus to permit the fine particles of metal to settle

to the bottom and separate the said particles from the muddy water and slime.

These and other objects may be attained by means of the construction illustrated in the accompanying drawing in which,

Figure 1 is a side elevation of an amalgamator and concentrator made in accordance with my invention. Fig. 2 is a longitudinal section and partial elevation of the same. Fig. 3 is a vertical sectional view taken on the line 3—3 of Fig. 2 looking in the direction indicated by the arrows. Fig. 4 is a vertical section taken on the line 4—4 of Fig. 1 looking in the direction indicated by the arrows.

Referring to the drawing for a more particular description of my invention the numeral 1 designates a base upon which is secured a pair of track rails of suitable form. Rising from the base 1 is a pair of standards 3 connected to the base by suitable braces 4. A pair of uprights 5 rise from the base 1 near one end thereof and braces 6 secure said uprights in place.

A carriage comprising side members 7 and end members 8 and 9 is provided with track wheels 10 journaled upon axles 11 secured to the side members 7 of the carriage. The wheels 10 are supported upon the tracks 2.

A suitable sheet metal casing which may be either sheet iron or copper, depending upon the use of the apparatus as a concentrator or an amalgamator, consists of a lower section 12 supported upon the carriage by means of suitable braces 13 connected to the side members 7 and to the lower section 12 of the casing. As shown in Fig. 3 the member 12 of the casing is flared at its upper end and provided with spill-ways 14 at the opposite sides thereof. Suitable metal feed pipes 15 lead into the opposite side of the bottom of the casing member 12, as shown more particularly in Fig. 2 and at the upper end of said metal feed pipes flexible hose or similar pipes 16 are led to the source of supply of the water or slime. At the bottom of the member 12 a slide clean-out door 17 is provided. The removable or telescopic upper section 18 of the casing is provided at opposite ends with a suitable sliding catch 19 adapted to engage a keeper 20 connected to the upper edge of the lower section 12 of the casing, as shown more particu-

larly in Fig. 2. The member 18 forms a cover for the casing and is provided at opposite sides with a T-shaped slot comprising a vertical portion 21, which extends to the lower edge of the member 18 and the horizontal cross slot 22.

Journalled in the standards 3 is a shaft 23, upon one end of which is a pulley 24 adapted to receive a belt from a source of power. Secured to the shaft 23 within the cover member 18 is a hub 24*. Secured to the hub 24* is a series of spring spokes 25, said spokes having oppositely extending base portions 26 secured to the hub 24* by suitable clamp rings 27. Connected to the outer ends of the resilient spokes 25 is a series of buckets 28. Extending through the top of the cover 18 is an eye bolt 29 adapted to be adjusted into the path of the buckets 28 as they are rotated. An eye 30 in the bolt 29 is adapted for the connection of the rope to lift the cover 18. At one side of the cover member 18 is a sliding door 31 adapted to cover an opening 32 in the member 18, and sliding in guides 31'.

A spiral spring 33 is disposed between the front end 9 of the carriage 7 and an upright 34 secured to the base 1. At the opposite end of the carriage 7 a pair of run-ways 35 is hinged to the end 8 of the carriage by means of hinges 36. Weighted balls 37 are placed in the run-ways and a suitable buffer 38 is secured to the end 8 of the carriage in line with each of the run-ways. Two connecting rods 39 each provided with a yoke 40 are pivotally connected one to each run-way, 35, said connecting rods 39 being pivotally mounted upon the cranked portions 41 of the shaft 42, said shaft being journalled in the uprights 5 and provided with a pulley 43 adapted to be connected to a source of power by means of a suitable belt.

The operation of my invention may be briefly described as follows: The water or slime containing the values is led through the feed pipes 15 into the lower member of the casing, said water being discharged at opposite points creating a vortex in the center thereof which thoroughly agitates the liquid. As the buckets 28 are rotated, each bucket comes into contact with the eye bolt 29 to throw the contents out through the opening 32, the tailings being led off through a sluice-way. As the race-ways 35 are raised and lowered alternately the weighted balls 37 strike the buffers 38 and vibrate the casing against the stress of the spring 33, the latter returning the carriage and casing to its initial position after each stroke. Owing to the horizontal slot 22 the casing can move horizontally without interfering with the shaft 23.

My invention is easy to operate, is quick in action, is efficient for its purpose of

thoroughly separating the small particles of the values from the muddy water and slime and is inexpensive to install and operate.

Having thus fully described the invention what is claimed as new is:

1. In an apparatus of the character described, a casing mounted upon a wheeled carriage, feed pipes leading into the bottom of the casing at opposite ends thereof, means for vibrating the casing, a telescopic cover for said casing provided with an opening, and a series of buckets within the cover, said buckets being mounted upon resilient spokes connected to a shaft, means for rotating said shaft, and means for retarding the buckets to discharge their contents out through the cover of the casing.

2. An amalgamator or concentrator comprising a casing supported upon a carriage mounted on wheels, tracks for said wheels, run-ways hinged to said carriage, means for operating said run-ways, weighted balls in said run-ways, a spring for returning the carriage to its initial position after movement by the weighted balls, feed pipes leading into said casing at opposite ends thereof, and a cover for said casing provided with a rotating wheel having spring spokes and buckets thereon.

3. In an apparatus of the character described, a carriage, a casing mounted on the carriage, means for vibrating the carriage, feed pipes leading into the opposite ends of said casing, a wheel mounted on a shaft within the casing, said wheel comprising resilient spokes carrying pockets, and means for retarding the buckets and discharging their contents through the casing.

4. An amalgamator comprising a casing mounted upon a carriage, tracks upon which said carriage is adapted to run, a spring at one end of said carriage, hinged run-ways at the opposite end of said carriage, weighted balls in said run-ways, means for raising and lowering one end of each run-way alternately, pipes leading into the casing at opposite ends thereof, and a telescopic cover containing a rotary discharging element for the tailings.

5. In an apparatus of the character described, the combination of a carriage mounted on wheels running on tracks, means for vibrating said carriage, spill ways at the upper edge of said casing, feed pipes leading into said casing, a telescopic cover for said casing, a wheel rotating in said cover, said wheel comprising resilient spokes having buckets secured thereto, and means for discharging said buckets through said cover.

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

ROBERT L. ROYSE.

Witnesses:

WALLACE C. MEREDITH,
C. M. JONES.