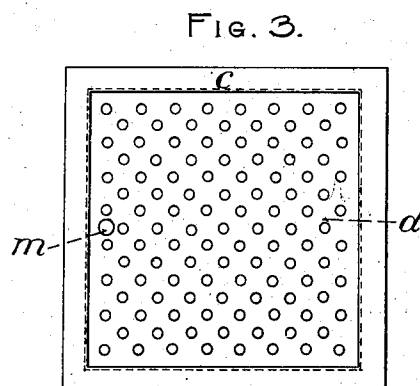
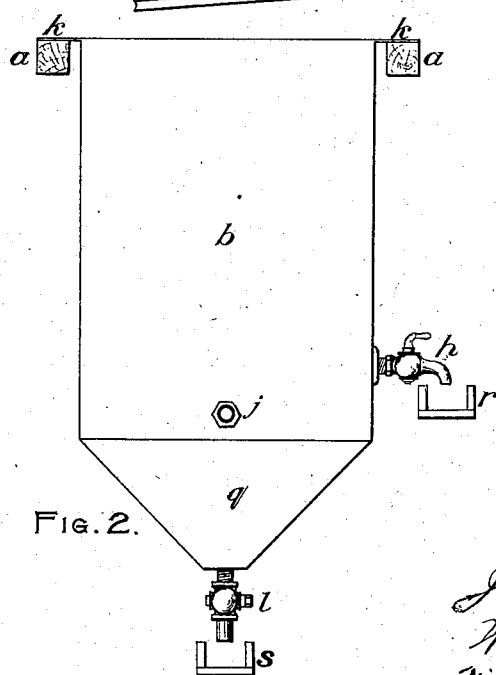
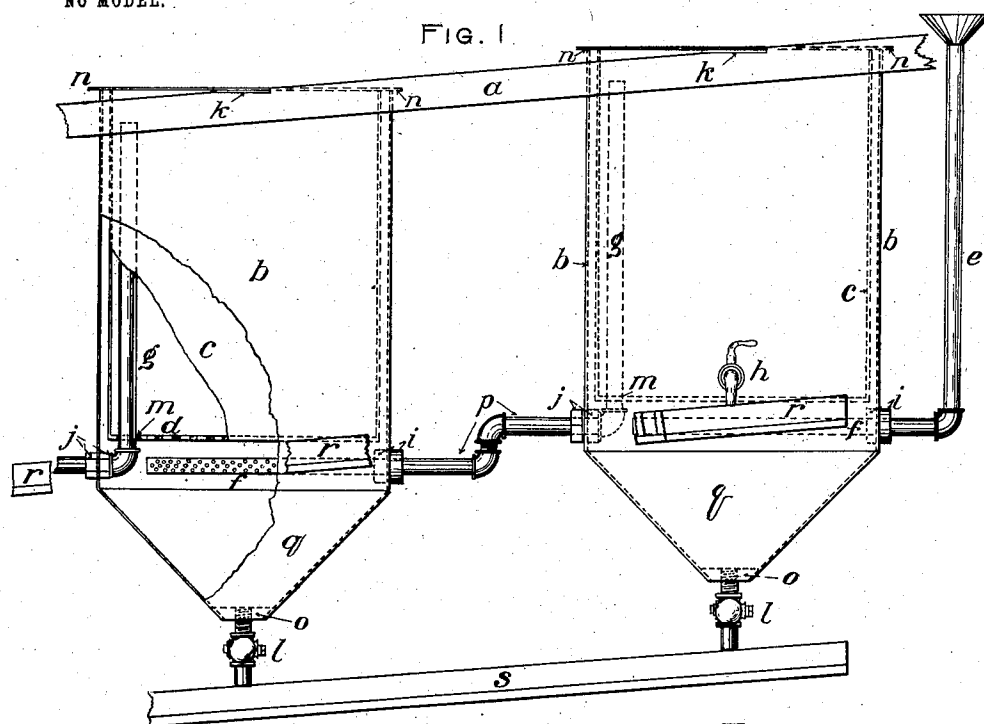


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PRECIPITATING ZINC BOX.

APPLICATION FILED DEC. 29, 1902.

NO MODEL.



WITNESSES:

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PRECIPITATING ZINC-BOX.

SPECIFICATION forming part of Letters Patent No. 737,046, dated August 25, 1903.

Application filed December 29, 1902. Serial No. 137,070. (No model.)

To all whom it may concern:

Be it known that we, JAMES BRADFORD TRUITT, WARREN LEE TRUITT, and WILLIAM OSCAR TEMPLE, citizens of the United States, residing at the city of Cripplecreek, county of Teller and State of Colorado, have invented new and useful improvements in precipitating zinc-boxes for use in connection with the cyanid process as applied to the treatment of gold and silver bearing ores in the extraction of the values therefrom, of which the following is a specification.

Our invention relates to improvements in precipitating zinc-boxes and in their construction and arrangement, in the means or device of transferring the solution from one zinc-box to another, and in providing the same with appliances for settling the slimes in a receptacle at the bottom of the box from which they can be drained into tubs or launders and an additional appliance for draining off the waste solution contained in the box above the slimes-receptacle, and in providing a removable inside box with perforated bottom to contain the zinc-shavings, and in certain novel features of construction, combination, and arrangement of parts hereinafter more fully described.

The objects of our improvement or improvements are, first, to prevent loss or waste of the gold-bearing solution in its passage from one zinc-box to another; second, by means of the adjustable or removable inner box with perforated bottom to allow the zinc-shavings contained therein to be removed and washed without disturbing the outside box or removing same from its frame; third, to provide a receptacle for receiving the slimes and allowing same to settle below the distributing-pipe, so as to avoid disturbance and agitation of the slimes by the flow of the solution; fourth, to provide for separating the slimes from the remaining solution in the upper part of the zinc-boxes, and for draining off such solution without disturbing the slimes in their receptacle below; fifth, to compel every particle of the gold-bearing solution to pass through the zinc-shavings in its passage from one zinc-box to another; sixth, to economize time in removing and washing the zinc-shavings and in

drawing off the solution and slimes. These objects are attained by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 represents a side elevation of the first two zinc-boxes of the series with all pipes, fittings, connections, and launders complete and ready for operation, the outer zinc-boxes being supported by lugs *k*, resting upon the sides of a wooden frame. Fig. 2 shows an end elevation of an individual zinc-box with the wooden beams or frames supporting the same and a stationary launder *r* under the discharge-cock *h* and a similar launder *s* placed below the bottom of the box *b*; and Fig. 3 shows a plan view of the inner zinc-box *c* with perforated bottom *d*, the border of the figure representing the flange-shaped top of the box.

Similar letters refer to similar parts throughout the several views.

Our improved zinc-box consists of two rectangular boxes with solid sides, one fitting closely and easily inside the other, so that it can be quickly and easily slid into its nest within the outer box *b* or removed therefrom. The outer box *b* is always stationary, hanging by its lugs from the frame already mentioned. Its lower end *q*, resembling an inverted pyramid, slopes to a small square base or bottom, in the center of which is a large threaded hole *o*, into which is screwed the tight-fitting upper nipple of the valve *l*. In one side of the outer box *b* is a discharge-cock *h* at a point about two inches above the bottom of the inner box *c*. A vertical stand-pipe *e* passes into the upper end or side of the first outer box of the series at a point just below the bottom of the inner box *c*, where it connects with the perforated pipe *f*, which extends horizontally just below the bottom of the inner box *c* and for nearly the full length thereof. The pipe *e* may be funnel-shaped at its upper end, as shown in the drawings, or it may be connected directly with the gold-solution tank or with the leaching-tanks. This pipe is used only in connection with the first box of the series, as shown in Fig. 1. It is the intake-pipe. Each box of the series is provided with an overflow or

discharge pipe *g*, which occupies a vertical position near the lower side or end of the box and extends to within about two inches of the top of the boxes *b* and *c*. The lower end of this pipe forms an elbow or angle and passes into a corresponding hole or opening in the lower side or end of the box *b* at a point in line with pipe *f*. Each pair of boxes in the series is connected by the pipe *p*, which connects with the discharge-pipe *g* in the upper box and with the perforated pipe *f* in the next box below. At the junction of these pipes are the jam-nuts *j j*, with gaskets, which form a water-tight joint with the connecting-pipes at these points. The pipe *p* may be made of any length, so as to allow the boxes to be placed at any distance apart or as closely together as may be desired. The pipes *e*, *f*, and *p* are screwed into the bosses *i i*, where they connect with the side of the box *b*. A lug *k* is attached to each side of the outer box *b* and supports the same by resting in a notch cut into the top of the frame *a*. This lug is placed just far enough below the top of the box *b* to prevent the flange at the top of box *c* from coming in contact with the inclined frame *a*. The inner box *c* is the zinc-box proper. It corresponds in shape with the upper or rectangular portion of the box *b* and is just enough smaller to enable it to slide into and out of box *b* without removing the latter from the frame. Box *c* has a perforated bottom *d*, as shown in Fig. 3, in which there is one larger perforation or hole *m*, through which pipe *g* passes when the box *c* is in its nest or is being lifted out of or replaced therein. The top of the box *c* on all four sides is turned outward to form a flange *n n*. When box *c* is in place, its flange-shaped top fits tightly upon the smooth straight top edges of box *b* and serves as a support for box *c*.

The two boxes *b* and *c* and all pipes, fittings, and connections shown in Figs. 1, 2, and 3 are metallic, except the supporting-frame *a* and the stationary launders *r* and *s*. The stationary launders are made of three pieces of boards or planks, nailed together so as to form a rectangular trough. The launder *r* is placed on each side of the boxes in the series, just under the discharge-cock *h*, and so constructed as to empty into a sump-tank. The launder *s* is placed under the valves *l* and extends for the full length of the series, connecting by a pipe with the acid-tank. The frame *a* consists of four pieces of scantling of sufficient size and length to support the weight of the series of zinc-boxes when filled with zinc-shavings and solution. The pieces of scantling are either nailed or mortised together at their ends, so as to form a rectangular frame just wide enough to receive a zinc-box and allow it to hang by means of its lugs resting upon the sides of the frame. The length of the frame is determined by the number of individual zinc-boxes which form the series. The frame may be supported by

upright wooden posts or in any other way, so that the zinc-boxes hanging therefrom are sustained at the desired height above the floor. It is also placed at a sufficient incline so that each succeeding zinc-box in the series shall hang about two inches lower than the box before it. Corresponding notches are cut in the top of both sides of the frame, so as to form horizontal resting planes for the lugs of the zinc boxes. By this means all the zinc-boxes are made to hang in a vertical position.

Operation: The gold-bearing solution is discharged into the zinc-boxes, either directly from the leaching-tanks or from intervening gold-solution tanks, which are elevated slightly above the series of zinc-boxes and operate as a reservoir, affording sufficient pressure to force the solution to rise from the bottom of each box as it enters same up through the zinc-shavings to the top of the box, where it overflows into pipe *g*. The inside box *c* is first packed with zinc-shavings to the usual height. The gold-bearing solution is then allowed to flow from its reservoir or tank into the stand-pipe *e* and down through same into the perforated pipe *f*, from whence it escapes into the bottom of box *b*, which the solution rapidly fills, and then rises under the pressure to which it is constantly subjected up through the perforated bottom of the box *c* and through the zinc-shavings in this box to the top of pipe *g*, into which the solution overflows in its downward path to the next box, where the process just described is repeated, and so on to the last box in the series. In this way a constant flow of the solution through the individual boxes of the series is maintained until the process of precipitation is complete and ready for a clean-up. After all the boxes of the series are filled by the first inflow of solution the heaviest slimes then begin to settle in the bottom *q* of the box *b*, where they collect undisturbed by the flow of the solution above them in its path through pipe *f* and upward through the perforated bottom and zinc-shavings of box *c* to the line of overflow in the same. When the process of precipitation is complete, the clean-up is made in the following manner. By opening the discharge-cock *h* the solution in box *c* above the line of this discharge-cock is drained off into the stationary launder *r* placed thereunder, by means of which it is carried through pipes or other connections to a sump-tank. In like manner the slimes in the bottom or receptacle *q* are drained into the stationary launder built to receive them and thence conveyed by pipe to the acid-tank. A hose may be used if necessary to wash out these slimes. The box *c* is then lifted out of its resting-place, the zinc-shavings therein washed and repacked in the box, which is then returned to its nest in box *b*. The entire clean-up can be made by two men in fifteen minutes or less time. There is no leakage of the solution with its consequent waste and filth. All pipe connections and fittings are water-

tight. The solution flows into the top of pipe *g* before reaching the top of boxes *b* and *c*, making it impossible for the solution to overflow from the top of these boxes onto the floor.

5 What we claim as our invention, and desire to secure by Letters Patent, is—

1. In a precipitating zinc-box, the combination with an outer imperforate box, of an inner removable perforate zinc-holding box.

10 2. In a precipitating zinc-box, the combination of an outer imperforate box, and an inner removable zinc-holding box having a perforate bottom and supporting means.

15 3. In a precipitating zinc-box, the combination of an outer imperforate box supported to be stationary, an inner removable perforate zinc-holding box, and a supporting-flange at the upper end of the inner box adapted to rest upon the top of the outer box.

20 4. In a precipitating zinc-box, the combination of an outer imperforate box having side lugs, frame members on which said lugs rest, and an inner removable perforate zinc-holding box having a supporting-flange at its top adapted to rest on the top of the outer box.

25 5. In a precipitating zinc-box, the combination of an outer imperforate box, of an inner perforate zinc-holding box supported above the bottom of the outer box.

30 6. In a precipitating zinc-box, the combination of an outer imperforate box having a valved outlet in its bottom and a valved outlet above said bottom, of an inner perforate zinc-holding box supported in the outer box above the bottom of the latter.

35 7. In a precipitating zinc-box, the combination of an outer imperforate box having a sloping bottom, a valved outlet at said bottom, a

valved outlet in the box above its bottom, and an inner removable zinc-holding perforate box 40 supported in the outer box above the bottom of the latter.

8. In a precipitating zinc-box, the combination of an outer imperforate box having a valved outlet in its bottom and a valved outlet 45 above its bottom, a launder at each outlet, and an inner removable zinc-holding box having a perforate bottom and supported in the outer box above the bottom of the latter.

9. In a precipitating zinc-box, a box having 50 a valved outlet in its bottom and a valved outlet above said bottom, and a perforate zinc-holding box removably supported in the aforesaid box with its bottom adjacent to the upper valved outlet.

10. In a precipitating zinc-box, having a valved outlet in its bottom and a valved outlet 55 above its bottom, a stand-pipe connected with the box above its bottom, and an overflow-pipe in said box.

11. In a precipitating zinc-box, an outer box having a valved outlet in its bottom and a valved outlet above said bottom, a stand-pipe 60 leading into the box above its bottom, an overflow-pipe, and an inner perforate zinc-holding box removably supported in the outer box above the bottom of the latter.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

JAMES BRADFORD TRUITT.

WARREN LEE TRUITT.

WILLIAM OSCAR TEMPLE.

Witnesses:

JESSYE BORLAND,

HUGER WILKINSON.