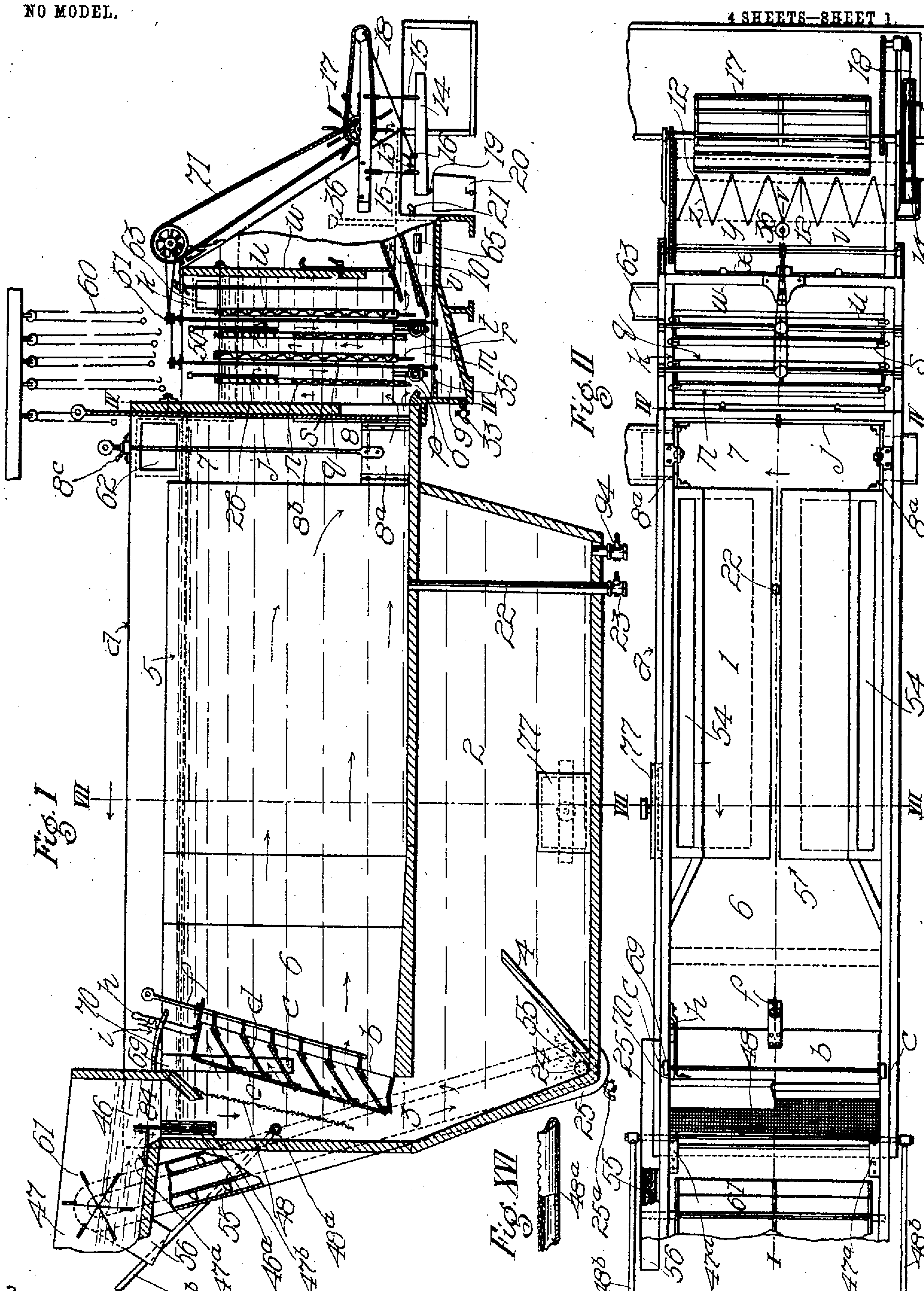
No. 774,786. PATENTED NOV. 15, 1904.

L. SACHSE.

GOLD SAVING APPARATUS.

APPLICATION FILED NOV. 27, 1903.

NO MODEL. 4 SHEETS—SHEET 1.



Witnesses:
J. A. Mansfield
Frederick S. Lyon

Inventor:
Louis Sachse
by Townsend Bros.
attys

No. 774,786. PATENTED NOV. 15, 1904.

L. SACHSE.

GOLD SAVING APPARATUS.

APPLICATION FILED NOV. 27, 1903.

NO MODEL. 4 SHEETS—SHEET 3.

Fig. IV

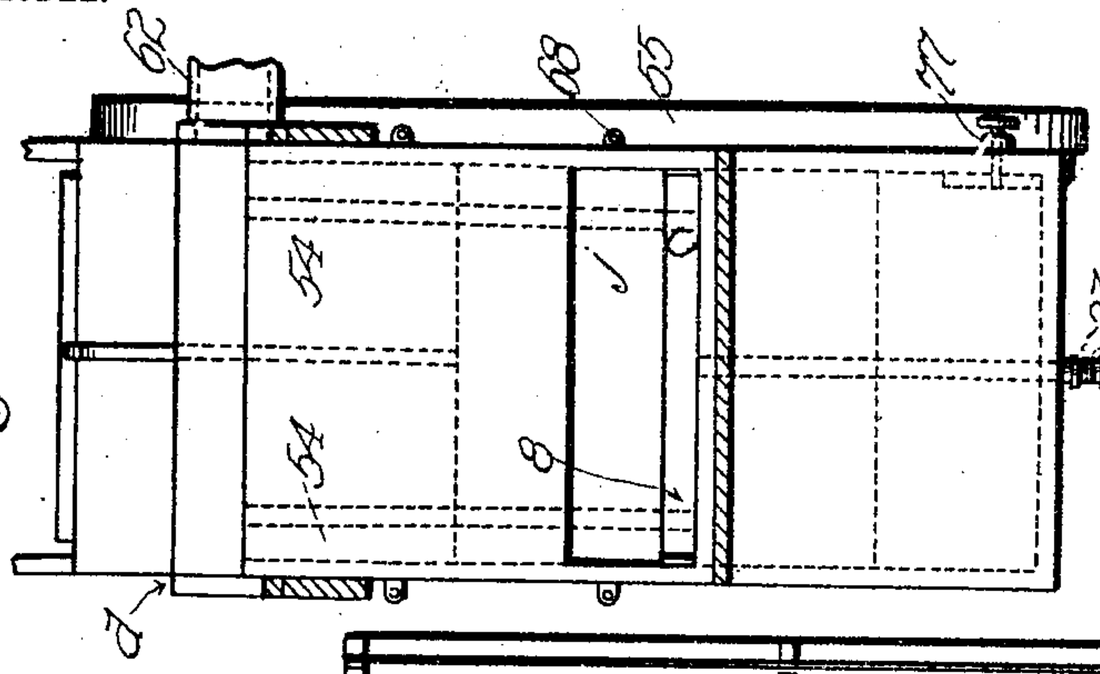
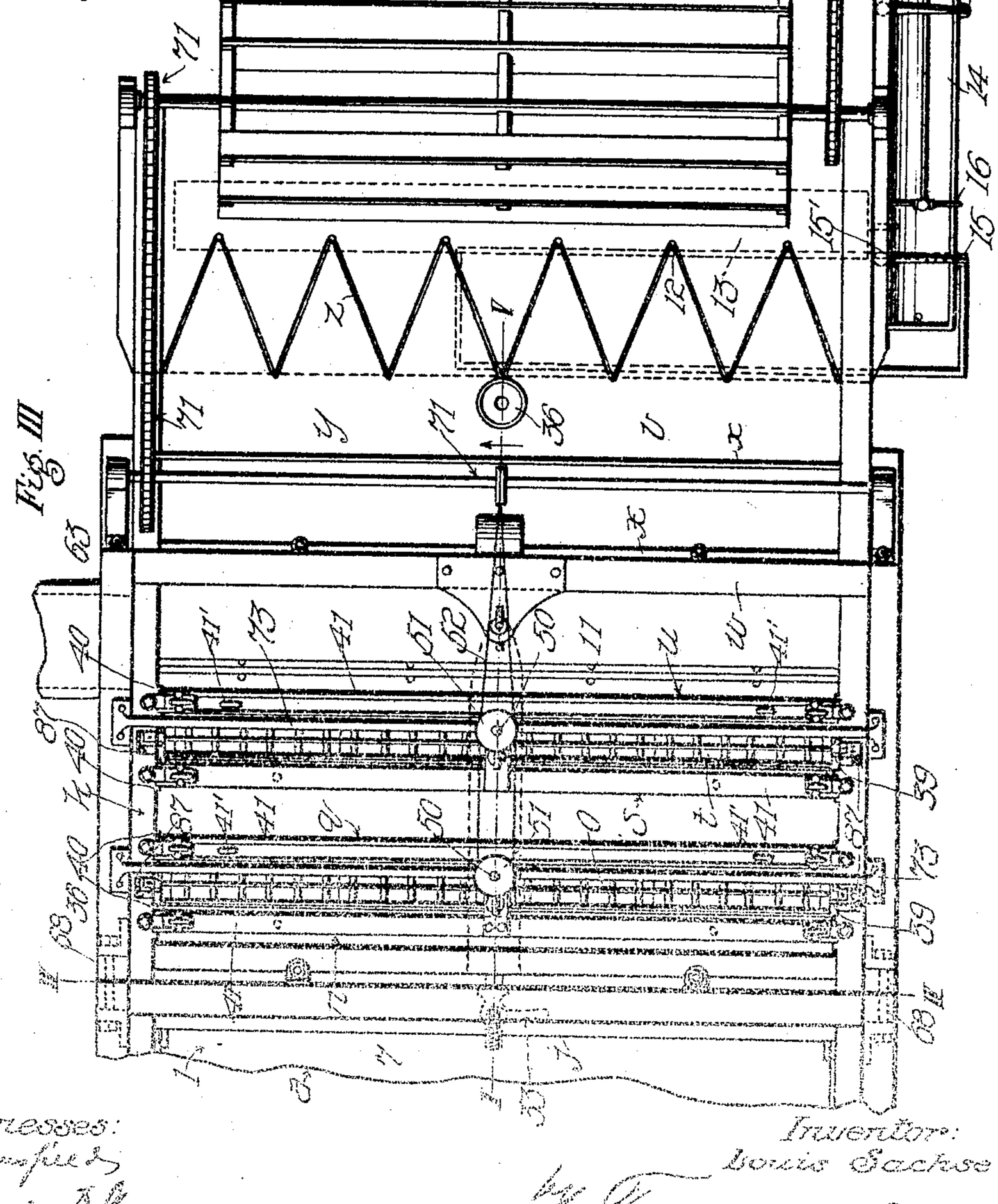


Fig. III



Witnesses:
Fred. Haynes
Patrick J. Hayes

Inventor:
Louis Sachse
by Pennie Edmonds
Atty's

No. 774,786. PATENTED NOV. 15, 1904.

L. SACHSE.

GOLD SAVING APPARATUS.

APPLICATION FILED NOV. 27, 1903.

NO MODEL. 4 SHEETS—SHEET 3.

Fig. V

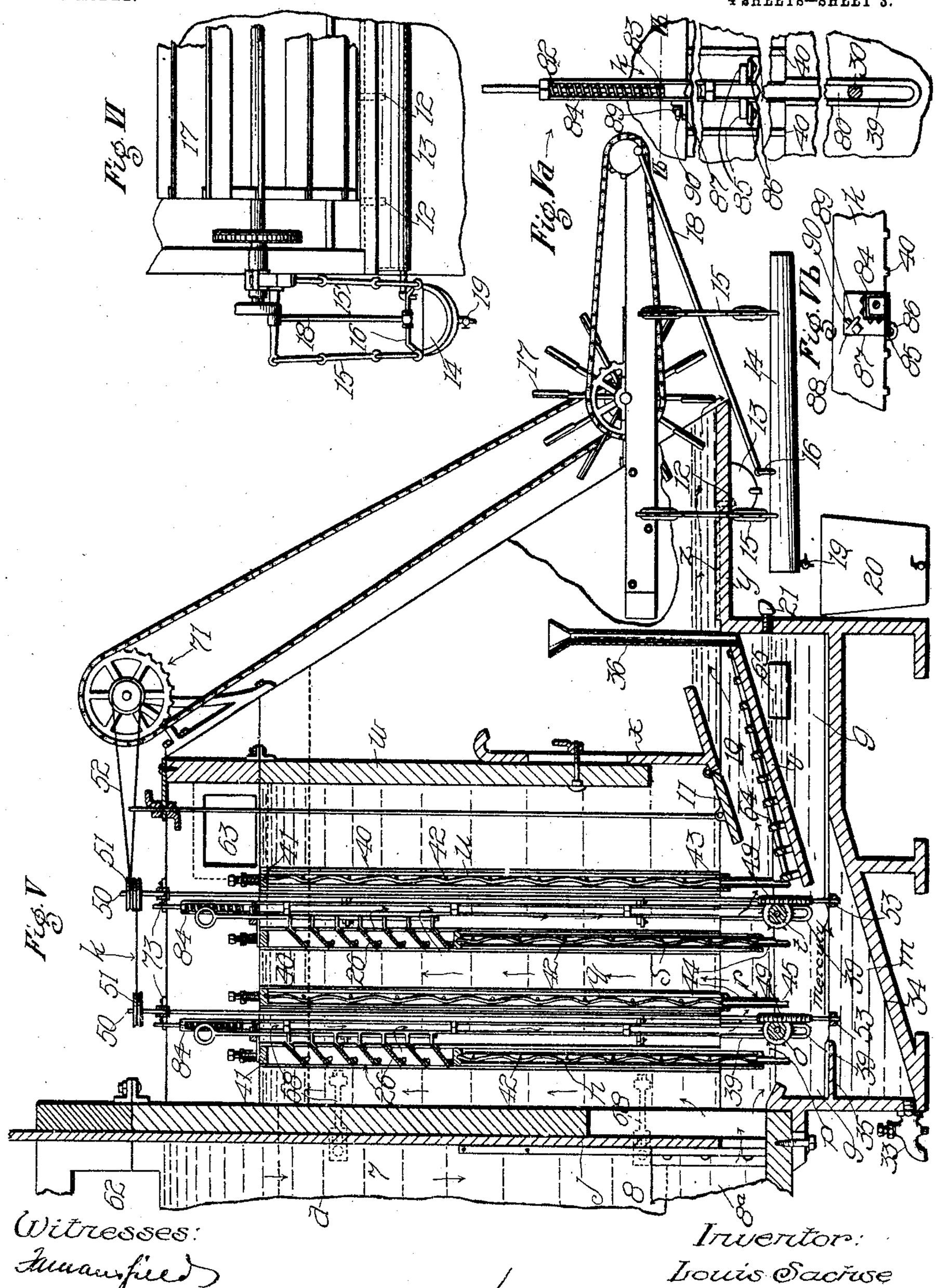


Fig. VI

Fig. VIa

Fig. VIb

Witnesses:

Thurmfield

Frederick Dhyon

Inventor:

Louis Sachse

by Townsend Bros.

Attys.

No. 774,786. PATENTED NOV. 15, 1904.

L. SACHSE.

GOLD SAVING APPARATUS.

APPLICATION FILED NOV. 27, 1903.

NO MODEL. 4 SHEETS—SHEET 4.

Fig. VII

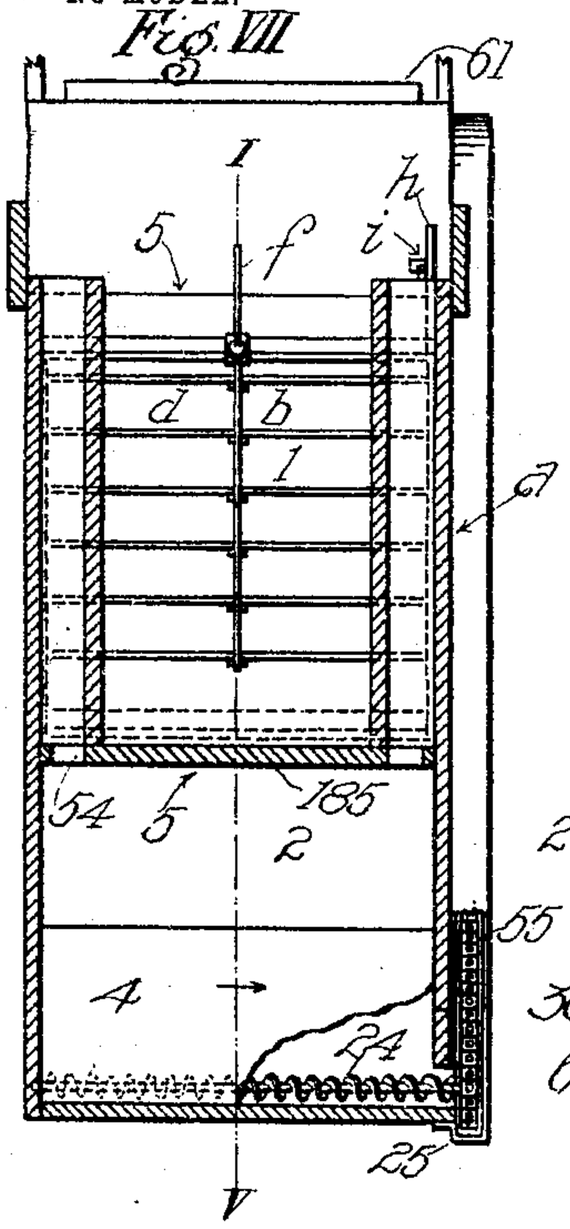


Fig. XIV

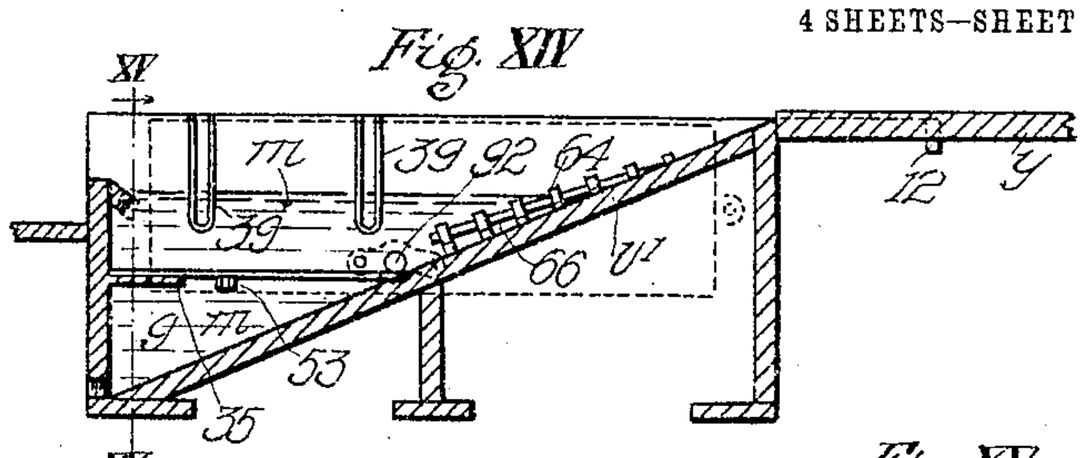


Fig. XV

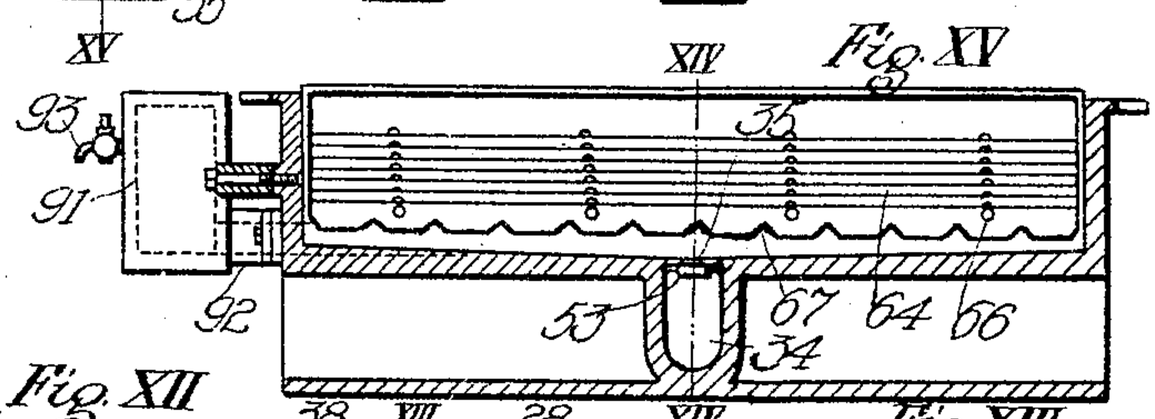


Fig. XII

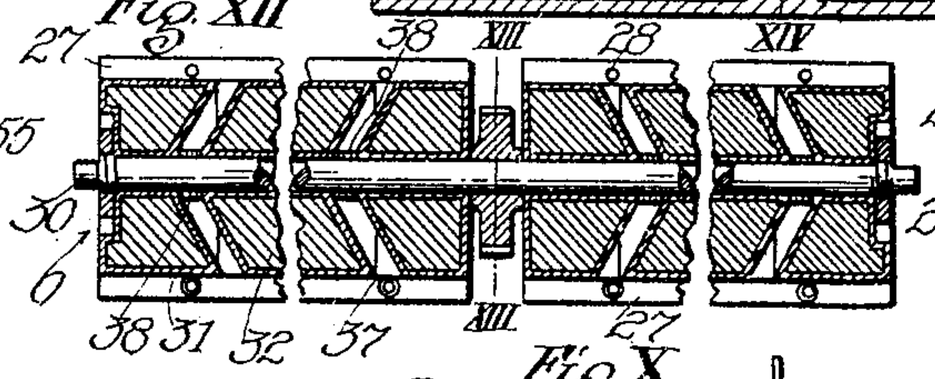


Fig. XIII

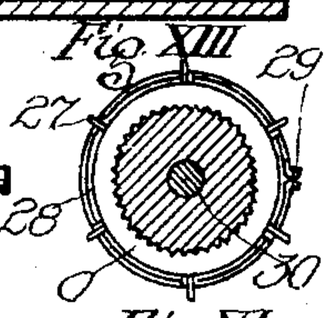


Fig. X

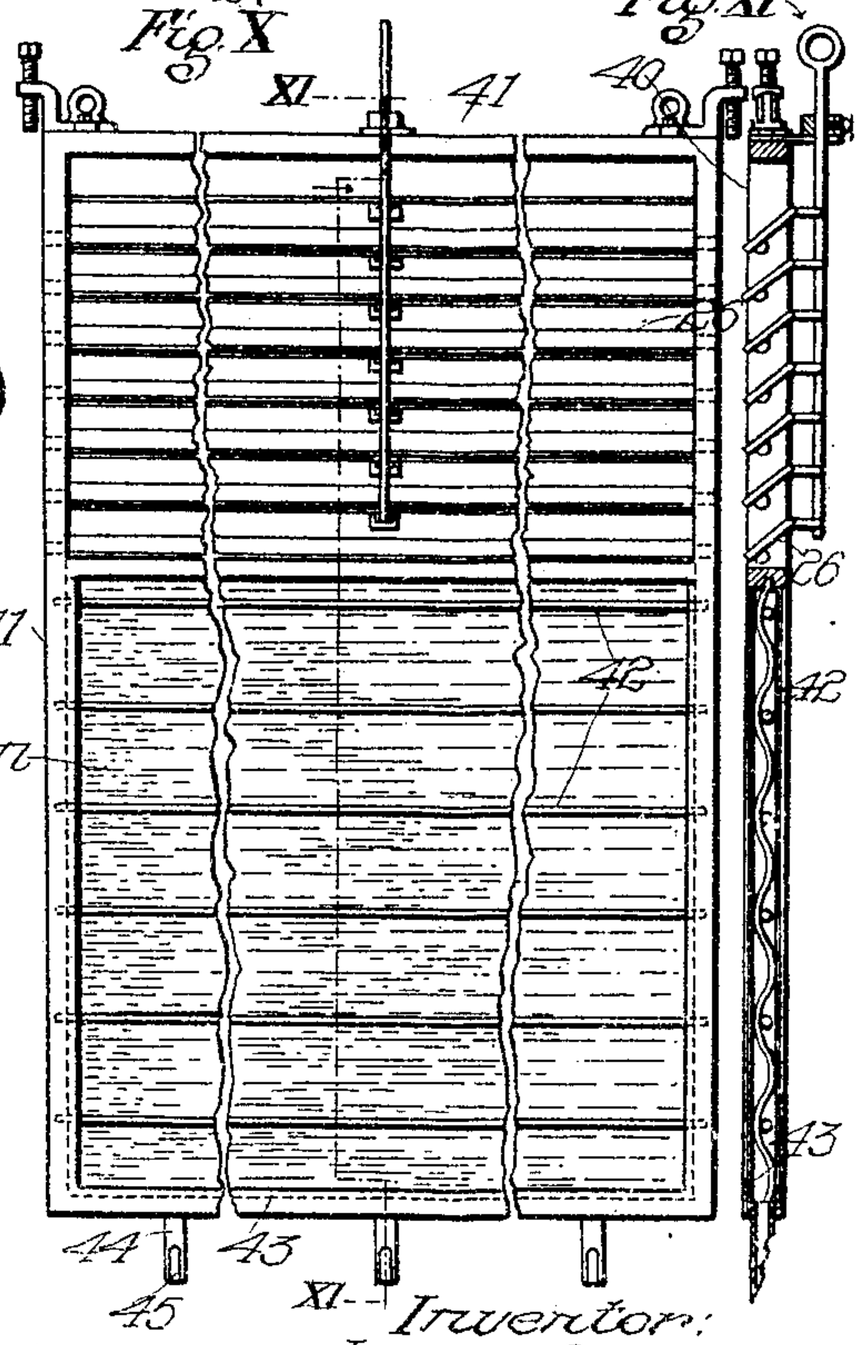


Fig. XI

Fig. VIII

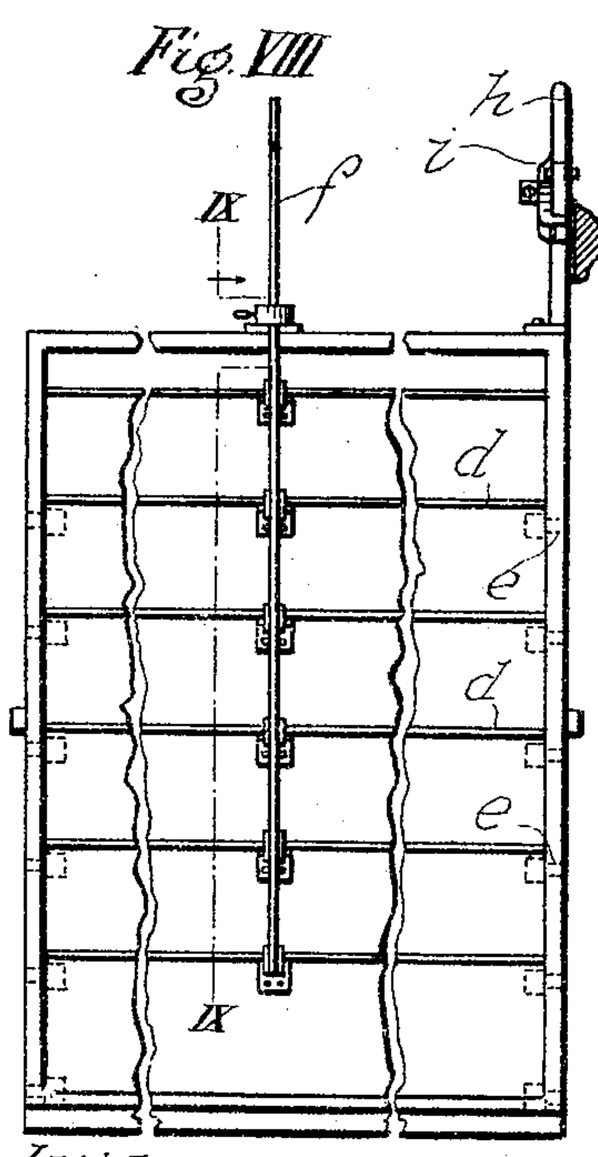
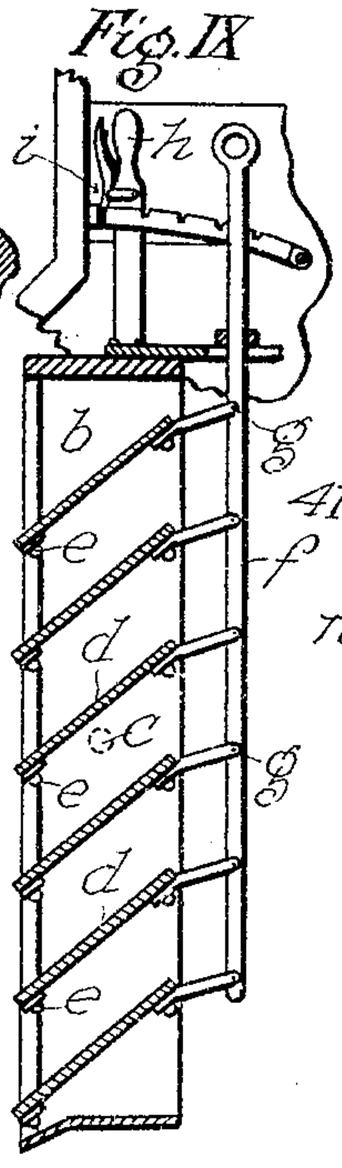


Fig. IX



Witnesses:
J. Emanuel
Frederick D. Lyon

Inventor:
Louis Sachse
by Townsend Bros.
attys.

No. 774,786. Patented November 15, 1904.

UNITED STATES PATENT OFFICE.

LOUIS SACHSE, OF OROVILLE, CALIFORNIA.

GOLD-SAVING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 774,786, dated November 15, 1904.

Application filed November 27, 1903. Serial No. 182,743. (No model.)

To all whom it may concern:

Be it known that I, LOUIS SACHSE, a citizen of the United States, residing at Oroville, in the county of Butte and State of California, have invented certain new and useful Improvements in Gold-Saving Apparatus, of which the following is a specification.

This invention relates to gold-saving apparatus, and particularly to gold-saving apparatus of the class set forth in my application for Letters Patent of the United States, Serial No. 85,843, filed December 13, 1901.

The object of this invention is to further improve and perfect the apparatus set forth in the said application for Letters Patent; to more particularly adapt such apparatus for use where the head of inflow or tailings cannot be secured with economy except at minimum height.

Other objects and ends in view will hereinafter appear from the detail description of construction and operation.

To these ends the invention consists in the constructions and in general and specific combinations of parts, all as hereinafter described, and particularly set forth in the claims.

The invention will be more readily understood by reference to the accompanying drawings, forming part of this specification, and in which—

Figure I is a longitudinal mid-sectional view of a gold-saving apparatus embodying my invention, partly in longitudinal mid-section on line I V, Figs. II and III. Fig. II is a plan view of the apparatus and a fragment of the sluice-box. The mechanical means for regulating the depth of the rollers in the mercury are omitted from Figs. I and II for the sake of clearance. Fig. III is an enlarged plan view of the amalgamating-box and devices at the tail of the apparatus. Fig. IV is an end elevation of the tank looking left from line IV IV, Figs. I, II, and III. Fig. V is an enlarged elevation, partly in longitudinal mid-section on line I V, Figs. II, III, and VII. Figs. V^a and V^b are fragmental views illustrating the roller-depressing devices. Fig. VI is a fragmental detail in elevation viewed from the right side of Fig. V. Fig. VII is a section on line VII VII, Figs. I and II, looking in the direction of the arrow. Fig. VIII is an elevation on a large scale of the precipitating-frame detached, portions being broken away to contract the view. A fragment of the precipitating-tank, with sector thereon, is also shown. Fig. IX is a sectional elevation of the same on line IX IX, Fig. VIII, looking to the right. Fig. X is an enlarged elevation of one of the amalgamating-frames and a plate thereon, fragments being broken away to contract the view. Fig. XI is a section on line XI XI of Fig. X looking to the right. Fig. XII is an axial section of one of the amalgamating-rollers. Fig. XIII is a cross-section on line XIII XIII, Fig. XII. Fig. XIV is a longitudinal section on line XIV XIV of Fig. XV, showing a modification of the amalgamating-pan designed for using less mercury than is required in the form shown in the other views. Fig. XV is a sectional detail of the modified amalgamating-pan on line XV XV of Fig. XIV looking to the right. Fig. XVI is a detail view of a fragment of the perforated or slotted pipe which passes through the sluice-box for the purpose hereinafter set forth.

a designates a tank to receive the sluice-tailings or other float-gold, carrying water at one end and furnished with upper and lower compartments 1 2, communicating with each other through an opening 3 in the floor of the upper compartment at the receiving end or head of the tank. The compartment 1 constitutes a passage for the water or tailings. The opening 3 extends transversely of said passage, and the compartment 2 constitutes a receptacle to hold a body of water approximately still to allow the black sand to precipitate. *b* designates a precipitating-frame pivoted in the tank on a horizontal axis *c* above the rear edge of said opening 3. *d* designates slats pivoted in said frame by pivots *e* to deflect the current upward, and thereby precipitate black sands which may be carried in the current. Said slats serve as a deflector in the passage directly above the opening 3 to cause the black sand to be removed from the tailings, while the silica is carried along in and through the passage.

Means are provided for adjusting the slats

d. Such means may consist in a rod *f*, pivoted by pivots *g* to the slats *d*, respectively. Any suitable means may be provided for adjusting the inclination of the frame. *h* represents a handle fastened to the frame for this purpose, and *i* a latch and sector to hold the handle when the frame has been appropriately adjusted.

4 designates a rearwardly and upwardly sloping partition in the lower compartment 2 of the tank below and rearwardly of the opening 3 to direct any black sands which may settle thereon down to the front of the tank, where they may be conveyed out of the tank by the screw conveyer 24 into an elevator-box 25, whence they may be elevated by the elevator 55, and thereby discharged through the spout 16.

5 designates a contracted passage in the upper compartment of the tank between the receiving and discharge ends 6 7 of the tank. This passage 5 is preferably in the form of a trough, rectangular in cross-section, extending lengthwise a portion of the length of the tank *a* between the receiving and discharge ends or compartments 6 7 of said tank. An outlet 8 is provided at the discharge end of the tank. *j* indicates a gate for restricting the flow of water or tailings through said outlet, so as to maintain a considerable depth of liquid in the tank—say four feet, more or less—above the outlet, whereby the liquid passing through the passage 5 will not be violently disturbed, but will be held sufficiently quiescent to allow any black sands contained therein to settle to the bottom of the passage before reaching the outlet 8, which may preferably extend entirely across the end of the outlet-compartment 7 in front of the bottom portion of the passage 5, so that only a small area of said outlet will be in the direct course of the liquid flowing through said passage. By this arrangement the heavier particles contained in the liquid flowing through the passage 5 will be allowed to settle to the bottom of said passage. 22 designates a test-pipe near the tail end of said passage, through which the operator may draw off the material from the bottom of the passage 5, thus to determine whether or no any black sands are passing through the precipitating-tank.

k designates an amalgamating-box to receive the discharge from the outlet 8. *m* designates a charge of mercury in a mercury-reservoir 9 in said amalgamating-box. The purpose of this body of mercury is three-fold, viz.: it serves an essential yielding element of the apparatus, forcing the water into contact with the amalgamating surfaces. It also serves to yieldingly support an amalgamating-roller, and it also serves as a solvent collector and carrier for the precious metals.

It is the mercury which coöperates with the plates to modify the flow of water and tailings and which raises and lowers the rollers. It forms the bearing of the rollers. In these respects the mercury performs functions different from that of the mercury in the ordinary forms of amalgamators, in which it serves simply as a solvent for the precious metals. In this apparatus it in effect serves the function of a concrete mechanical element in supporting the rollers, &c.

n designates the first amalgamating-plate arranged to form a vertical partition across said box above the charge of mercury. *o* designates an amalgamating-roller floating in and partially immersed in the mercury behind and below said first amalgamating-plate *n* to obstruct the flow of the tailings. The lower edge of the plate *n* is sufficiently close to the surface of the mercury to restrict the passage to a less cross-sectional area than the outlet 8, so as to force a portion of said tailings to flow over the top of said amalgamating-plate, which is below the top of the amalgamating-box, a passage being thus provided both above and below said plate. An open space or passage *p* is left between the top of the roller *o* and the bottom of the plate *n* to allow water or tailings to pass between the plate and roller.

A second amalgamating-plate *q* is provided, forming a vertical partition across the amalgamating-box and extending above the level of the top of the first amalgamating-plate, an open space *r* being left between said second amalgamating-plate *q* and the mercury to allow the water or tailings to pass below said plate.

s designates a third amalgamating-plate, which is arranged like the first plate with relation to the mercury and to an amalgamating-roller *t*, provided behind and below the edge of the third amalgamating-plate *s* in a manner similar to that in which the roller *o* is mounted.

u designates a fourth amalgamating-plate arranged like the second amalgamating-plate *q*.

v designates a rearwardly and upwardly sloping partition or floor at the rear portion of the amalgamating-box to separate the rear end of the mercury-chamber 9 and the outlet-passage 10, so that the body of mercury will be lively and free to pulsate under the varying pressures exerted on the mercury by the liquid flowing through the box as the same increases and decreases in depth.

w designates a rear water-retaining wall extending across the amalgamating-box above the passage 10. *x* designates adjustable means at the lower edge of said wall for regulating the size of the passage 10. Said means may comprise a plate 11, set aslant at the same general inclination as the partition or floor *v*, so that the water which flows from the amalgamating-plates must pass upward along the slanting floor *v* and underneath the slanting plate 11. By adjusting the appliance *x* appropriately the level of the water in the amalgamating-box can be regulated.

y designates an apron extending rear-

wardly from the sloping floor *v* and furnished with zigzag riffles *z* to collect any mercury which may be forced over the sloping floor *v*. 12 designates outlets leading downward from the upper side of said riffles to conduct the mercury into a conduit 13, from which it flows into a swinging trough 14, closed at one end, and the bottom of which slopes downward to said closed end, thereby to allow any mercury to collect at the closed end while the water flows off at the open end. The trough 14 is suspended by loose links 15 15.

16 designates an arm fixed to the trough and extending upward therefrom.

17 is a current-wheel to be driven by the water escaping at the tail of the machine.

18 designates a pitman driven by the current-wheel and connected with the arm 16 to move the trough 14 longitudinally.

19 designates a cock at the closed end of the trough, through which the mercury which settles in the trough 14 can be drawn off from time to time into a receptacle 20 therefor.

21 designates an outlet from the mercury-reservoir 9 above the normal level of the mercury in said reservoir to allow mercury to escape from the reservoir 9 in case of any overcharge from the mercury supplied to the amalgamating-plates.

The plates may be of the usual character and of any desired form, plain or corrugated; but corrugated plates are preferred, as shown in the drawings, for the reason that this form gives more surface for holding the mercury and for the float-gold to come into contact with.

The displacement of a certain amount of mercury by the weight of the water forcing it forward under the floor or apron *v* creates a slight pulsation without agitation, and thereby gives life to the mercury-bath. The floor 185 of the passage 5 is desirably level, so that the current will not be strong along the same. Near the outlet 8 therefrom a valved test-pipe 22, having an open mouth at said floor and extending downward therefrom, is arranged to receive black sands if any precipitate through the slowly-flowing water.

In practical operation the cock 23 of the test-pipe 22 will be normally left open sufficiently to allow the operator to constantly inspect the tailings or other waters, which are flowing at the bottom of the trough 5. When the attendant observes that iron sands are flowing out through the test-pipe 22, he will adjust the slats *d* at a sharper angle, so as to direct the iron sands downward more positively. If he finds that silica is carried out by the elevator 55 and that no iron sands are flowing out through the pipe 22, he will reduce the inclination of the slats.

26 designates slats or shutters above the upper edges of the amalgamating-plates *n* and *s*, respectively. By adjusting these slats at a greater or less inclination the flow of water over the tops of the amalgamating-plates *n* and *s* can be increased or diminished, and consequently the flow of water under said amalgamating-plates and the pressure thereof on the mercury surface decreased or increased, as the case may be.

The rollers *o* and *t* are designed to rotate slowly in the mercury-bath in order to always present to the flowing water a fresh bright face of mercury. The surface of these rollers is of copper, and means are provided for causing the slow rotation of the rollers. These rollers may ordinarily be furnished with plates or blades 27, radiating from the rollers, as detailed in Fig. XIII, and which may consist of copper plates strung on wires 28, which are drawn around the roller and fastened together at the ends 29 by any suitable means. The current of water will strike upon the roller and the blades at the upper side of the roller as the roller rotates slowly in the mercury, and the surfaces of the roller and blades emerging from the mercury and freshly coated thereby will receive the float-gold and amalgamate the same. The roller may be made of a hollow shell or shells 31, filled with a filling 32, of lead or mercury, as required.

33 designates a cock constituting means for drawing off mercury from the lower part of the mercury-reservoir 9. This cock opens from the lower end of a sloping gutter 34 in the bottom of the reservoir 9. 35 designates an apron arranged above said gutter at the outlet end thereof, being at the inlet end of the amalgamating-box. This apron extends toward the discharge end of said box and terminates at a line substantially under the first amalgamating-plate. Its purpose is to prevent the mercury from dropping from the top of the reservoir to supply the discharge through the outlet 33 when the same is open. The floor of the reservoir is preferably slanted from each side toward the middle to cause the heavier mercury charged with gold to flow into the gutter, along which it will flow down to the discharge outlet or cock 33. In practical operation the gold-charged mercury will seek the lowest level, so that when the outlet 33 is open such mercury will flow out. The apron 35 serves to separate the gold-charged mercury in the gutter from the uncharged mercury at the top of the reservoir. In practical operation the gold-charged mercury will be drawn off in small quantities.

36 designates a pipe at the tail of the amalgamating-box, through which pure mercury will be supplied to the mercury-reservoir from time to time as the charge is drawn off through the outlet 33.

The amalgamating-rollers *o* and *t* are preferably provided with annular channels 37 in order to give greater surface, and since the rollers are arranged to partially extend above the level of the mercury and in the path of

the gold-carrying waters said waters flow into the channels 37, and are thus impinged upon the surfaces of the walls of such channels. Preferably the amalgamating-roller is formed in sections, as indicated by the cases 31 and fillings 32 in Fig. XII, and these sections are separated from each other by suitable means, such as the rings 38, to form the channels 37. The walls of these channels are preferably of a conical form, so that the channels extend obliquely relative to the axis of the roller. The action of the water will keep the channels free from clogging; but the heavy material will be directed downward onto the mercury, in which the rollers are partially submerged. By this construction and arrangement a very extensive amalgamating-surface is provided with a determined diameter of roller, and the action thereon of the liquid passing into and out of such channels is such as to increase the effectiveness with which the gold comes into contact with the amalgamating-surface.

39 designates vertical ways in which the ends of the axle 30 of the roller moves up and down.

The weight of the rollers can be adjusted so as to maintain a certain level of submersion. The roller will rise and fall with the level of the mercury.

If the rollers are made sufficiently light, they will float upon the mercury and allow the water to pass underneath the roller-shaft between such shaft and the mercury.

40 designates ways in which the frames 41 of the amalgamating-plates may be secured. The frames 41 are slotted on each side for the admittance and removal of the amalgamating-plates, the frames 41 having slats 26, adapted to permit the withdrawal of the plates through the sides of the frames, and the next or higher plates may be lifted directly from their frames by eyes 41′, fastened to the plate.

42 designates rods which may be applied extending across the frames 41 and against which the amalgamating-plates may be placed to thereby be supported against pressure of the flowing water, so that the weight of the water will not bulge the plates. If thick heavy plates are used, the rods may be dispensed with.

43 designates a gutter at the lower end of the amalgamating-plate frame 41, into which gutter the mercury and amalgam from the amalgamating-plates will flow.

44 designates pipes, which may be of greater or less number, arranged across the frame 41, leading downward from the gutter 43 to discharge the mercury into the mercury-reservoir 9. 45 designates outlets opening rearwardly and downwardly from said pipes 44, thereby to prevent any clogging of said pipes with sand. In a frame three feet wide I prefer to place about five of the pipes 44, arranged at equal distances apart.

46 designates a box at the end of the flume 47 to direct the water downwardly under pressure toward the current-impeding appliances or gates *d*.

48 designates a screen to impede the water as it flows from the downwardly-directed opening 84, so as to allow the heavy particles to precipitate over the opening 3. The opening 3 extends transversely of the passage, and the means for supplying the water or tailings to the apparatus are arranged to supply the same to the tank vertically above said opening, and the deflector is desirably arranged vertically over the opening, so that eddies are formed directly above such opening, and the black sand will fall unimpeded and undisturbed into the lower receptacle 2 across the entire front end thereof, while the silica is upborne by the current and carried on through the passage 1.

46[a] is a plate which extends across the box 46 and is held in place by angle-plates 47[a] and by grooves 47[b] in the sides of the box. The upper edge of this plate extends above the bottom of the sluice-box, so that the heavy particles must pass between the plate and the box downward.

48[a] is a perforated or slotted pipe which passes through both sides of the box and receives water under pressure from suitable pipes 48[b] from the outside. By withdrawing the plugs from the couplings the perforated pipe can be cleaned when necessary. The heavy particles trapping between the plate 46[a] and the back of the compartment when passing the lower edge of the plate downward are played upon by the water under pressure from the perforated or slotted pipe 48[a], adding materially to the effectual precipitation of the black sands through the opening 3 into the lower compartment 2.

25[a] represents a series of stop-cocks in the bottom and across the length of the conveyer-trough for the purpose of discharging the concentrates there when the elevator is not used.

When my apparatus is used for concentrates only, it is preferable to have a gate in both sides of the box. I have shown such gates 8[a] at both sides of the box and at the rear end of the upper compartment. These gates are slidably arranged in vertical guides and controlled by rods 8[b], which pass through wing-nuts 8[c], by which they are held in the desired position.

The means for rotating either of the rollers *o* or *t* may comprise a worm-gear 49, driven by a shaft 50 and a pulley 51 on said shaft, a belt 52 leading from said pulley and driven by any suitable mechanism—such, for instance, as the wheel 17 and the intermediate connections 71.

53 designates a step for the lower end of the worm-shaft 50. When the level of the mercury changes, the gear-wheel of the worm-gear moves freely on the worm of such gear,

because the roller is free to turn. By the construction and arrangement shown it is possible to rotate the rollers at the lower part of the box 46 and to allow said rollers to rise and fall with the movement of the surface of the mercury.

Where it is desirable that the tailings shall pass between the axle and the mercury, the spaces between the sections of the roller will be increased to lighten the roller and to allow a free passage of the tailings between the sections. It is to be understood that the form of sections can be changed at the pleasure of the constructor.

54 designates relief-wells opening upward from the lower compartment 2 of the tank *a* at the sides of the trough 5 to relieve the upward pressure of the water in the lower compartment. The water will rise and fall in said wells in response to the rise and fall of the water in the upper compartment of the tank.

60 designates tackle for raising and lowering the amalgamating-plates.

61 designates a water-wheel to be turned by the water in the flume 47 to operate the elevator 55.

62 designates an overflow from the tank *a* to prevent the water from rising above the walls of the passages 5, with which said overflow communicates.

63 designates an overflow to allow the escape of the water from the amalgamating-box without overflowing the top of said box.

64 designates a grate on the top of the sloping floor *v* to intercept any mercury which otherwise might be carried up said floor.

65 designates a floating weight of any suitable material in the mercury-bath 9 beneath the floor *v*. The purpose of this weight is to occupy space in the mercury-bath which would otherwise be filled with mercury.

In the modification shown in Figs. XIV and XV an extension 91 of the mercury-reservoir 9 is made at the side of said reservoir instead of underneath the sloping floor *v'*. Said extension connects with the main reservoir through a pipe 92. Said extension may be air-tight and furnished with a valved overflow 93, which is above the level of the inlet or connecting-pipe 92, so that when the valved overflow is closed the mercury rising in the reservoir will compress the air therein, which will thus form an air-cushion against the surface of the mercury. The body of mercury in the extension serves to allow the pulsations of mercury in the mercury-bath 9. The size of the extension for the mercury may be varied within the judgment of the constructor.

The grating 64 may be made of metal bars fastened together by bolts 66 and are provided with notches 67 at the lower edge to allow any mercury collected thereby to flow down the floor into the mercury-reservoir.

68 designates bolts by which the amalgamating-box is secured against the end of the precipitating-tank.

69 designates slides in which the pivots *c* of the frame of the precipitating-deflectors are journaled. These slides are made to enter grooves 70 in the walls of the tank, so that the frame may readily be removed and replaced.

77 designates a manhole in the wall of the lower compartment 2, through which the sedimentary deposits may be removed from the lower compartment from time to time as the same may accumulate.

73 designates cross-bars in which the worm-gear shafts 50 are journaled, respectively.

It may be preferable to provide mechanical means for regulating the depth to which the rollers will be sunk in the mercury. A form of such means is shown in the drawings, being omitted, however, from Figs. I and II on account of the small size of said figures. In such form a follower 80 rests upon the top of the journal 30 of the rollers *o* and *t*, respectively, and suitable means are employed to yieldingly hold the follower 80 down. The weight of the follower may be regulated to serve the required purpose, and the pressure may be increased by a spring 82 resting on a shoulder 83 of the follower.

The force applied to sink the rollers in the mercury may be regulated by adjusting either the weight of the follower or the tension of the spring 82. This may usually be done at the time of manufacture, when the specific gravity of the roller may be determined and the parts may be proportioned for performing the work under determined conditions.

84 designates a case for the follower and spring.

85 designates hooks, and 86 eyes or staples, by means of which the case 84 is held in the amalgamating-box *k*.

87 designates a bracket projecting from the case 84 and furnished with a slot 88, through which may pass a staple 89, that is fastened in and projects upward from the top of the amalgamating-box *k*.

90 designates a pin passed through the staple to hold the bracket down.

94 designates a valved outlet from the lower compartment 2 of the tank *a* for the purpose of emptying said tank when desired.

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

1. In a gold-saving apparatus, the combination, with a tank having upper and lower compartments arranged one above the other and having a floor between them, said compartments intercommunicating through an opening in said floor, means restricting the outflow from the upper compartment; means vertically over the opening adapted and arranged to intercept the precipitates from such liquid through the opening into the lower compartment, and means for supplying a current of

water in opposition to the downward current of water above said opening in said floor.

2. In a gold-saving apparatus, the combination, with a tank having upper and lower compartments arranged one above the other and having a floor between them, said compartments intercommunicating through an opening in said floor, means restricting the outflow from the upper compartment; means vertically over the opening, adapted and arranged to intercept the precipitates from such liquid through the opening into the lower compartment, and a pipe arranged in the path of the incoming gold-bearing water and adapted to project water thereinto.

3. In a gold-saving apparatus, the combination with a tank having upper and lower compartments arranged one above the other and having a floor between them, said compartments intercommunicating through an opening in said floor, means for supplying gold-carrying water to said tank vertically above said opening; means for restricting the outflow from the upper compartment, adjustable means vertically over the opening adapted and arranged to intercept the inflowing liquid and to direct the precipitates from such liquid through the opening into the lower compartment, and a pipe within said tank in the path of the inflowing gold-carrying water for delivering a stream of water into said gold-carrying water.

4. In a gold-saving apparatus, the combination with a tank having upper and lower compartments arranged one above the level of the other and intercommunicating through an opening in the floor separating said compartments; a feed-sluice for supplying and directing gold-carrying water downwardly into said tank and vertically above said opening, a plate arranged transversely of the upper compartment and close to the outer or front wall of said tank and in the path of the inflowing gold-carrying water and forming a contracted passage between the front wall of said tank and said plate, said plate extending above the floor of said feed-sluice, means for restricting the outflow from the upper compartment, means vertically over the opening adapted and arranged to intercept the inflowing liquid and direct the precipitates from said liquid through the opening into the lower compartment, and means for supplying a current of water below said plate in opposition to the downward current from said feed-sluice.

5. In a gold-saving apparatus, the combination with a tank having upper and lower compartments arranged one above the level of the other and intercommunicating through an opening in the floor separating said compartments; means for supplying gold-carrying water to said tank vertically above said opening, a plate arranged transversely of the upper compartment and in the path of the inflowing gold-carrying water and forming a contracted passage between the front wall of said tank and said plate; means for restricting the outflow from the upper compartment and means vertically over the opening adapted and arranged to intercept the inflowing liquid and to direct the precipitates from such liquid through the opening into the lower compartment, and a pipe arranged transversely in said tank in the path of the inflowing gold-carrying water and adapted to create an eddy in said inflowing gold-carrying water.

6. In a gold-saving apparatus, means for separating black sands from water or tailings, comprising a receptacle constructed to hold a body of water approximately still, a passage for water or tailings arranged above said receptacle and communicating therewith through an opening at the inlet end of the passage, said receptacle being closed throughout except at said opening at the inlet end of the passage, means vertically over the said opening for deflecting the current over said opening at the inlet end of the passage, and a pipe arranged transversely above said opening and in the path of the water or tailings and adapted to create an eddy in the water or tailings.

7. In a gold-saving apparatus, means for separating black sands from water or tailings and silica carried thereby, comprising a receptacle constructed and arranged to hold a body of water approximately still, a passage for the water or tailings arranged above said receptacle and communicating therewith through an opening, a series of adjustable deflectors arranged in said passage vertically above the opening to deflect the current above said opening, and a pipe arranged transversely of said passage and adapted to project a stream of water thereinto to create an eddy therein.

8. In a gold-saving apparatus, means for separating black sands from water or tailings and silica carried thereby, comprising a receptacle constructed and arranged to hold a body of water approximately still, a feed-sluice arranged above said receptacle and communicating downward thereinto through an opening and forming a passage for water or tailings downward thereinto, a plate arranged transversely of said passage and extending above the top thereof and forming a passage between said plate and the front wall of said passage, a series of adjustable deflectors arranged in said passage vertically above the opening to deflect the current above said opening, and means for supplying a current of water below said plate in opposition to the downward current from said feed-sluice.

9. In a gold-saving apparatus, means for separating black sands from water or tailings and silica carried thereby, comprising a receptacle constructed and arranged to hold a body of water approximately still, a passage for water or tailings arranged above said receptacle and communicating therewith

through an opening, a plate arranged transversely of said passage and extending above the top thereof, a passage being formed between said plate and the front wall of said passage, a series of adjustable deflectors arranged in said passage vertically above the opening to deflect the current above said opening, and a pipe arranged transversely of said passage and adapted to deliver a stream of water therein to create an eddy.

10. In a gold-saving apparatus, means for separating black sands from water or tailings and silica carried thereby, comprising a receptacle constructed to hold a body of water approximately still, a feed-sluice arranged above said receptacle and communicating vertically thereinto at the front end thereof forming a passage for water or tailings, an adjustable frame in said passage, a plurality of deflectors in said frame above said opening, a plate arranged between said frame and the front wall of said receptacle and transversely of said passage, the upper edge of said plate extending above the vertical front wall of said receptacle, and means for supplying a current of water below said plate in opposition to the downward current from said feed-sluice.

11. In a gold-saving apparatus, means for separating black sands from water or tailings and silica carried thereby, comprising a receptacle constructed to hold a body of water approximately still, a passage for water or tailings arranged above said receptacle and communicating therewith through an opening, an adjustable frame in said passage, a plurality of deflectors in said frame above said opening, a plate arranged between said frame and the front wall of said receptacle and transversely of said passage, the upper edge of said plate extending above the vertical front wall of said receptacle, and a pipe arranged transversely of said passage and above said opening and adapted to deliver water into said passage to form an eddy therein.

12. In a float-gold-saving apparatus, the combination of a receptacle divided into two compartments intercommunicating at the inlet end of said receptacle through an opening, means for precipitating gold-bearing water or tailings into said receptacle at the front end thereof, a trough formed within the upper compartment of said receptacle and into which the body of silica-carrying water flows, wells being formed between the outer walls of said trough and the walls of said upper compartment, said upper compartment provided at its rear end with a regulable outlet and with regulable outlets in its side walls substantially at the rear ends of said walls.

In testimony whereof I have hereunto signed my name, in the presence of two subscribing witnesses, at Oroville, in the county of Butte and State of California, this 18th day of November, 1903.

LOUIS SACHSE.

Witnesses:
RAY FROST,
W. R. FROST.