(No Model.) 2 Sheets—Sheet 1.

D. G. FRISBIE.

GOLD SAVING APPARATUS.

No. 545,015. Patented Aug. 20, 1895.

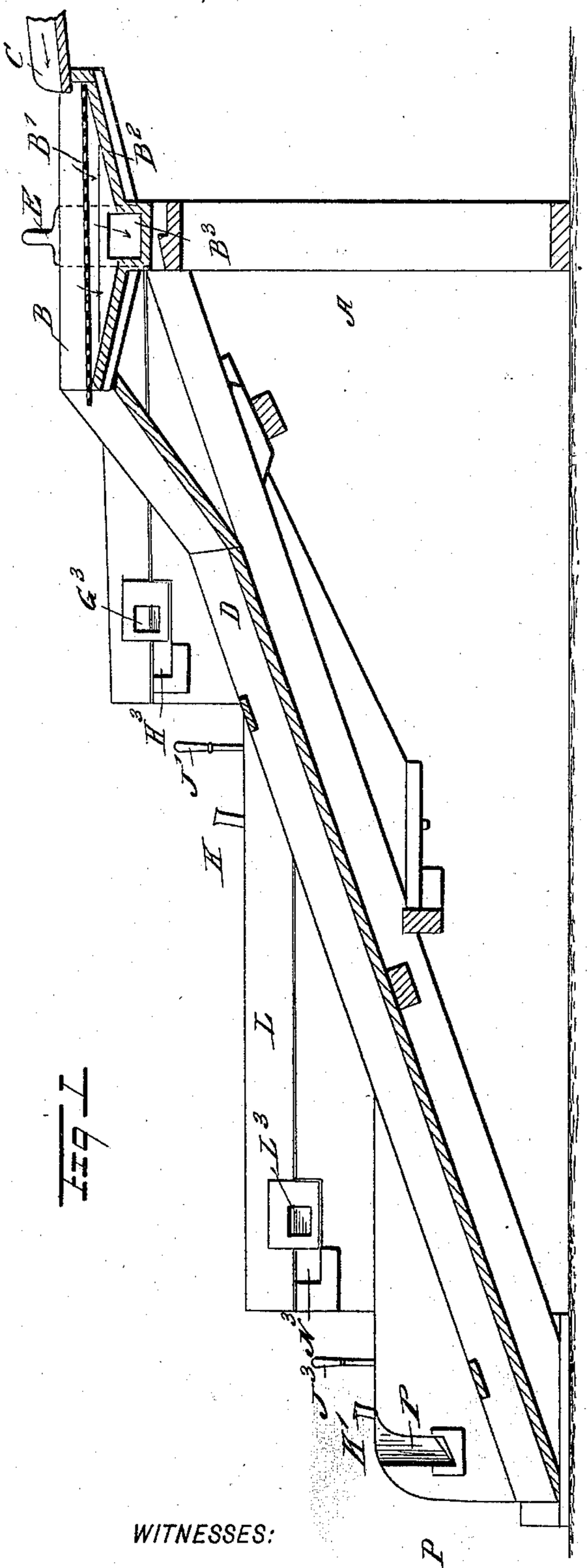

Fig. 1

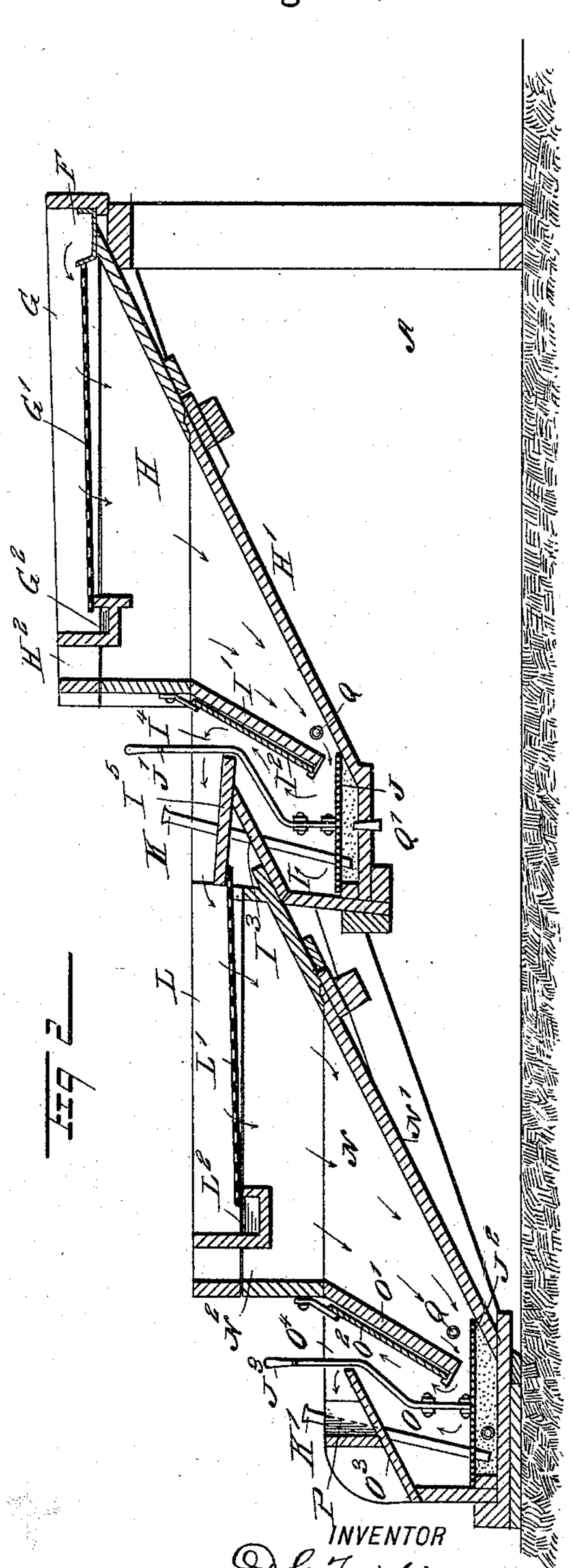

Fig. 2

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(No Model.) 2 Sheets—Sheet 2.

D. G. FRISBIE.

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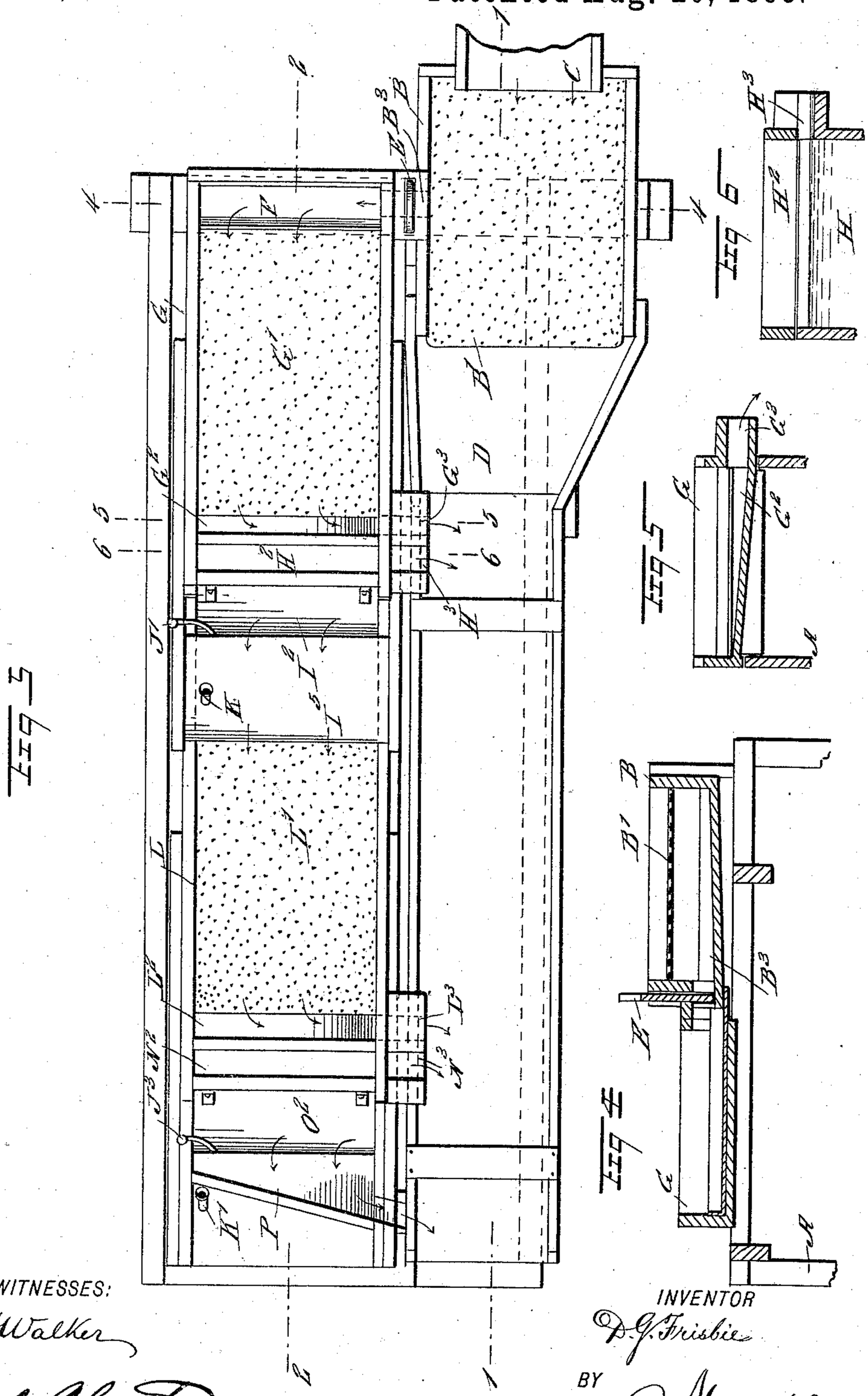

Fig. 1.

Fig. 3.

Fig. 4.

Fig. 5.

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UNITED STATES PATENT OFFICE.

DENNIS GILBERT FRISBIE, OF DAYTON, WYOMING.

GOLD-SAVING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 545,015, dated August 20, 1895.

Application filed November 14, 1894. Serial No. 528,940. (No model.)

To all whom it may concern:

Be it known that I, DENNIS GILBERT FRISBIE, of Dayton, in the county of Sheridan and State of Wyoming, have invented a new and Improved Gold-Saving Apparatus, of which the following is a full, clear, and exact description.

The invention relates to placer and quartz mining, and its object is to provide a new and improved gold-saving apparatus which is comparatively simple and durable in construction and arranged to readily save the nuggets, coarse gold, and flour-gold at a comparatively small expenditure of water and labor.

The invention consists principally of a settling-tank discharging at its lower end into a chamber having a false perforated bottom, and an inclined copper plate forming one side of the chamber, so that the material in rising in the chamber passes over the copper plate to the outlet in the top of the chamber.

The invention also consists of certain parts and details and combinations of the same, as will be fully described hereinafter and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a sectional side elevation of the improvement on the line 1 1 of Fig. 3. Fig. 2 is a similar view of the same on the line 2 2 of Fig. 3. Fig. 3 is a plan view of the improvement. Fig. 4 is a cross-section of the same on the line 4 4 of Fig. 3. Fig. 5 is a similar view of the same on the line 5 5 of Fig. 3, and Fig. 6 is a similar view of the same on the line 6 6 of Fig. 3.

The improved gold-saving apparatus is provided with a suitably-constructed frame A, supporting at its upper end a hopper B, into which discharges the sluice-box C, carrying the water and gold-bearing sand from the placer-mine or the quartz-mill, as the case may be.

The hopper B is formed with a perforated false bottom B′, over which pass the large rocks and other coarse tailings to be discharged over the end of the bottom into a tailing-chute D, inclined downward to carry off the tailings. The gold nuggets, sand, and water pass through the coarse perforations in the false bottom B′ on the inclined bottoms B^2 of the said hopper B and into a transversely-extending inclined channel B^3, containing a gate E and leading into the nugget-box F, contained in the upper end of a hopper G, as is plainly illustrated in the drawings. This hopper G is provided with a perforated bottom G′, on which discharges one side of the nugget-box F, the said plate G′ discharging at its lower end into a transversely-arranged chute G^2, passing at one end at G^3 through the side of the hopper G to discharge the tailings into the tailing-chute D, as indicated in Fig. 5.

The gold-bearing sand and water passing through the perforations in the plate G′ pass into a settling-tank H, having an inclined bottom H′ and connecting at its lower end with a gold-retaining chamber I, as is plainly illustrated in Fig. 2.

In the top of the tank H and in the rear of the chute G^2 is arranged an outlet H^2, connected by an opening H^3 in the side of the tank H with the chute D, so that surplus water in the settling-tank can pass through the opening H^3 to the tailing-chute D. The chamber I is provided with a perforated false bottom J, between which and the real bottom of the chamber I is placed mercury, so that any gold passing through the said perforated false bottom J is taken up by the mercury to form an amalgam. The perforated bottom J is preferably hung on a lever J′, extending upward and to the outside of the apparatus, to be taken hold of by the operator so as to permit of shaking the plate J several times during a day's operation of the machine.

The dividing-partition I′ between the chamber I and settling-tank H carries a copper plate I^2, which forms one side of the chamber, the other side I^3 of the chamber being inclined upward, so as to cause the water and sand flowing into the chamber I to be deflected toward

the plate I^2 before passing through the outlet I^4 in the top of the chamber. This copper plate I^2 is removably held on the partition I′, and over it passes the gold-bearing sand, so that any gold contained in the flow is taken up and adheres to the copper plate. The top I^5 of the chamber I is slightly inclined, as is plainly shown in Fig. 2, and leads to a hopper L, containing a perforated bottom L′, below which is a settling-tank N, similar in construction to the settling-tank H, and likewise discharging at its lower end into a gold-retaining chamber O, similar in construction to the chamber I.

The lower end of the perforated bottom L′ discharges into a chute L^2, connected by a side opening L^3 with the tailing-chute D, so that the sand or other tailings passing over the said bottom L′ into the chute L^2 are carried to the tailing-chute D. The perforated bottom L′ has finer perforations or meshes than the bottom G′, and the latter is finer than the bottom B′ in the hopper B. By thus graduating the several bottoms the coarser material is always removed, while the finer gold-bearing sands pass into the settling-chambers, as previously explained.

The settling-tank N has an outlet N^2, connected by an opening N^3 with the chute D, and the chamber O is provided with a perforated plate J^2, held on the lever J^3 for agitating the plate similarly to the plate J. The space between the plate J^2 and the bottom of the chamber O is filled with mercury, and the said chamber is also provided with a copper plate O^2 and an inclined side O^3, leading to the outlet O^4, which connects with a diagonally-arranged inclined chute P, discharging at its lower side into the tailing-chute D. In the side of the settling-tank N and near the lower end thereof is arranged an outlet Q, normally closed by a stopper, which, when removed, permits of withdrawing the sand and water from the tank when cleaning the machine.

In the bottom of the chamber I is arranged an outlet Q′ for withdrawing the amalgam whenever deemed necessary. A pipe K extends into the bottom of the chamber I and a similar pipe K′ extends in the bottom of the chamber O, the said pipes serving for introducing a new supply of mercury whenever necessary.

It will be seen that by the arrangement described a small amount of water is required to wash the material through the several parts of the machine, the water being capable of carrying along a large quantity of the material.

It will further be seen that by the construction as described no skilled labor is required for operating the machine. All the gold contained in the material passing down the sluiceway into and through the machine is saved, while the machine is not liable to be clogged up by the tailings, owing to the ready discharge of the tailings at all times into the tailing-chute D.

By arranging the copper plates on the side of the amalgam-chamber where the water comes in the latter will keep the plates free of sand, and all the amalgam and mercury that comes off the plates is caught in the amalgam-chamber, as the lower edge of the copper plates is near the bottom of the amalgam-chamber. As the water and gold-bearing sand come into the amalgam-chamber from the bottom, the water passes up through the gold-bearing sand under pressure, and thereby keeps the sand in motion to give the gold a chance to pass through the false bottom and settle in the mercury.

Any mercury that escapes from the quartz-mill will be readily caught and held when passing into this machine.

The lower or last amalgam-chamber is preferably larger than the others and uses less water, so as to give the flour and flake gold a better chance to settle. The copper plates are for this purpose set lower down, so as to come close to the bottom and thereby prevent a large quantity of water from passing into the chamber.

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

1. A gold saving apparatus, provided with a settling tank, and an amalgam chamber into which discharges the lower end of the said settling tank, the said amalgam chamber being provided with a perforated plate forming a false bottom, between which and the real bottom is held mercury, and a copper plate forming one side of the said chamber and upon which the material is deflected by the oppositely inclined side of the chamber, substantially as shown and described.

2. A gold saving apparatus comprising a hopper formed with a nugget box into which passes the material, the said hopper being provided with a perforated bottom upon which discharges one side of the said nugget box, a settling tank into which passes the material passing through the said perforated bottom, an amalgam chamber into which discharges the lower end of the said settling tank, the said chamber being provided with a perforated plate removably held over mercury contained in the bottom of the said chamber, a copper plate forming one side of the said chamber, and a deflecting side arranged in an inclined position opposite the said copper plate, to deflect the material onto the said copper plate, substantially as shown and described.

3. In an amalgamator, a casing having a settling chamber and an amalgam chamber formed therein, the amalgam chamber being provided with an inlet at the bottom of one of its sides and with an outlet at the upper part of the same side, and having its wall on

the side opposite the inlet and outlet inclined upwardly and toward the outlet, and the settling chamber being provided with an outlet at its bottom connected to the inlet of the amalgam chamber, substantially as set forth.

4. In an amalgamator, a casing having an amalgam chamber the inlet and outlet openings of which are formed, respectively, at bottom and top of rear wall, the front wall of said chamber being upwardly and rearwardly inclined, a perforated plate extending across the amalgam chamber at the level of the mercury therein and means for moving said plate, substantially as set forth.

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