No. 615,424. Patented Dec. 6, 1898.

S. H. BROWN & R. S. STEELY.

ORE CONCENTRATOR OR PLACER MINING MACHINE.

(Application filed Oct. 2, 1897.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.

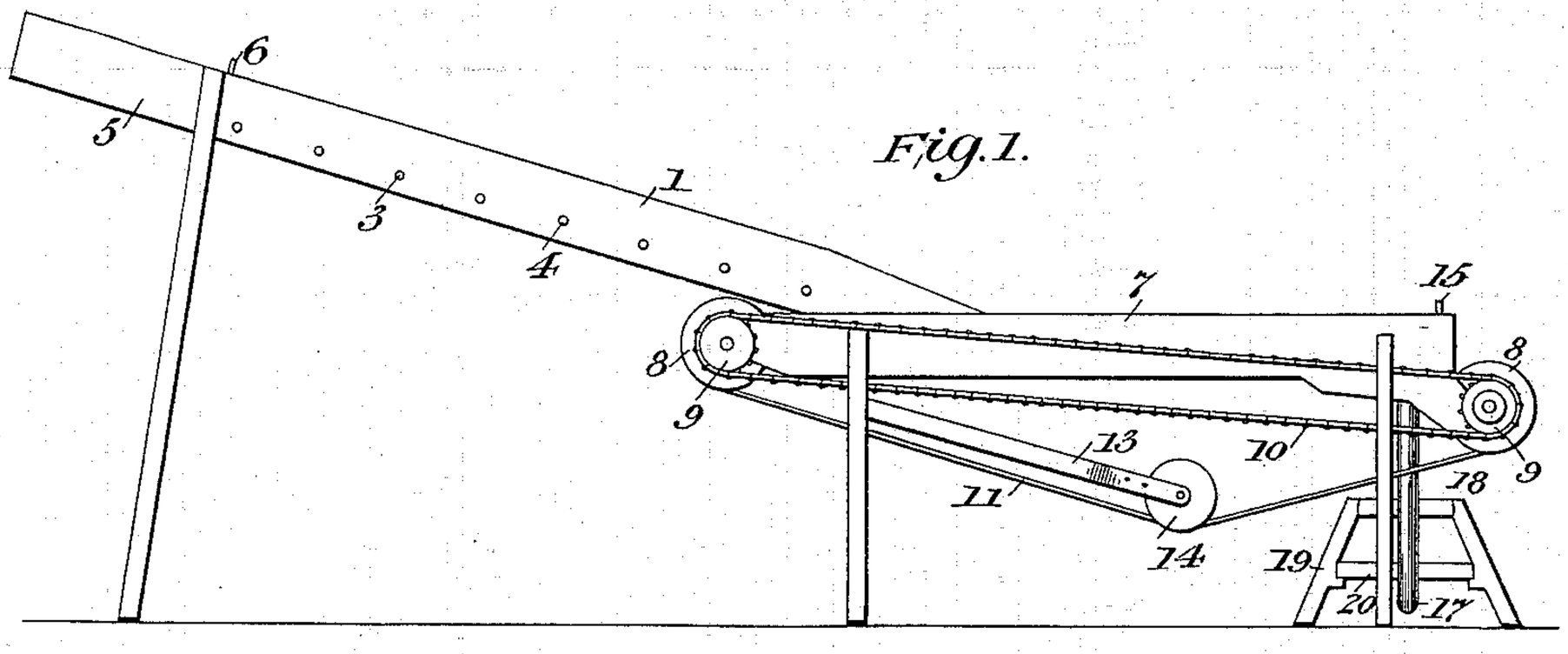
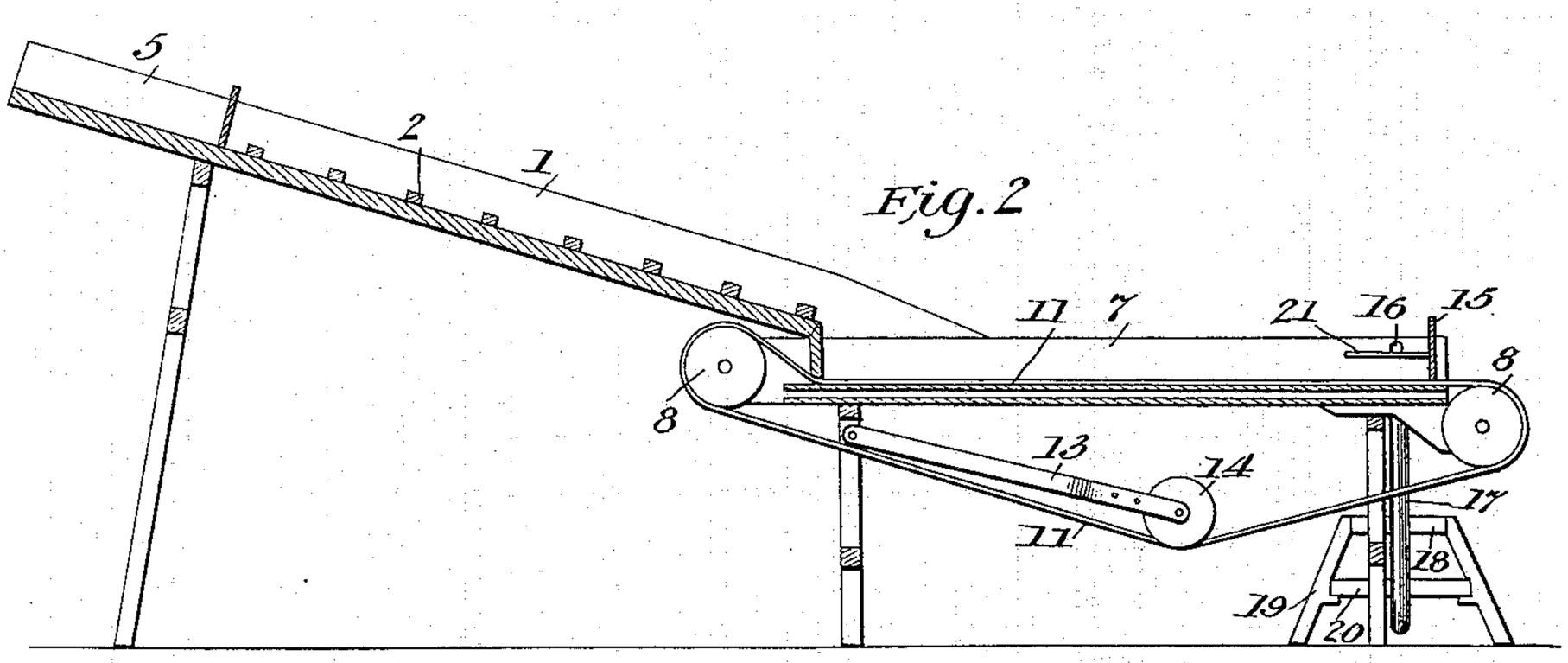


Fig. 2.



Witnesses.
Joy Gundy
Joseph R. Roth

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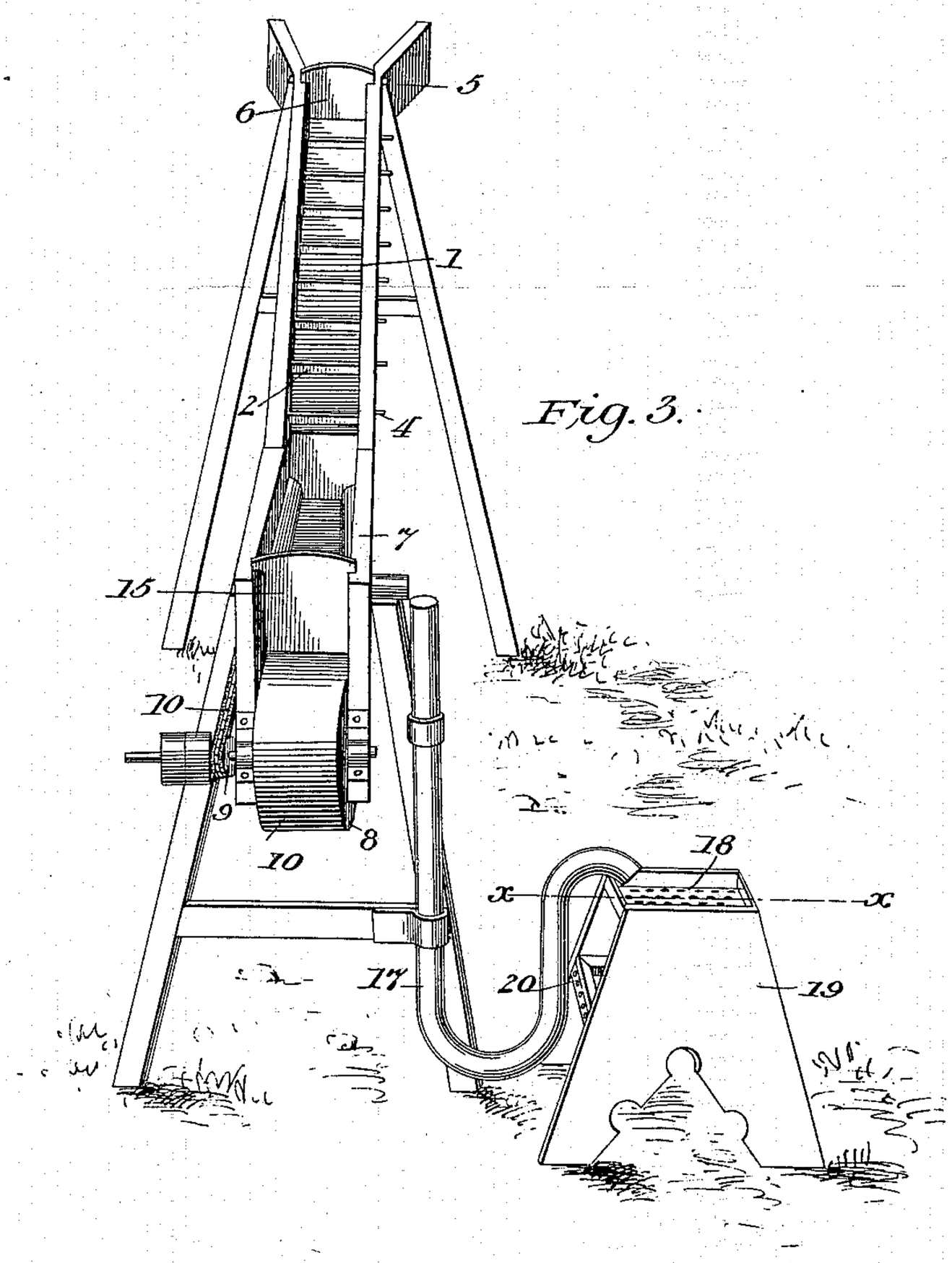
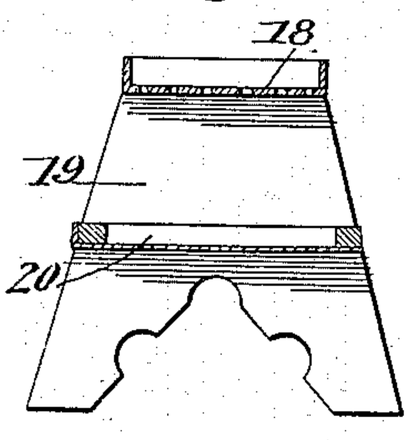


Fig. 3.

Fig. 4.



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UNITED STATES PATENT OFFICE.

SAMUEL H. BROWN AND REILY S. STEELY, OF READING, PENNSYLVANIA.

ORE-CONCENTRATOR OR PLACER-MINING MACHINE.

SPECIFICATION forming part of Letters Patent No. 615,424, dated December 6, 1898.

Application filed October 2, 1897. Serial No. 653,887. (No model.)

To all whom it may concern:

Be it known that we, SAMUEL H. BROWN and REILY S. STEELY, citizens of the United States of America, residing at Reading, in the county of Berks and State of Pennsylvania, have invented certain new and useful Improvements in Ore-Concentrators or Placer-Mining Machines; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to an ore-concentrator or placer-mining machine; and it consists of the construction of the several parts, which will be more fully hereinafter described and claimed.

The object of the invention is to provide a machine which is specially constructed for working fine-sand placers and the saving of all flour-gold.

In the accompanying drawings, Figure 1 is a side elevation of the machine embodying the invention. Fig. 2 is a central vertical longitudinal section of the same. Fig. 3 is a perspective view of the machine. Fig. 4 is a section through the line *x x*, Fig. 3.

Referring to the drawings, wherein similar numerals of reference are employed to indicate corresponding parts in the several views, the numeral 1 designates an elongated trough, which is elevated at the front and has extending transversely across the same strips 2, which are arranged at regular intervals and rest against the base of the trough. The said strips 2 and the bottom of the trough form a series of pockets adapted to receive mercury, and in one side of the trough, for the purpose of removing the mercury, are a series of openings 3, having removable plugs 4 fitted therein. The upper end of the trough 1 is provided with a hopper 5 for the introduction of the material to be operated upon and is separated from the main body of the trough by a gate 6. The said trough 1 communicates at its lower end with a horizontal trough or concentrator 7, having at the front and rear thereof rollers 8, to which are connected sprocket-wheels 9, traversed by an endless chain 10. Over the rollers 8 a fabric belt 11 travels and extends through the trough or concentrator 7 adjacent to a false bottom. To preserve a proper tension of the fabric belt 11, an arm 13 is pivoted to one of the supports of the trough or concentrator 7 and carries a pulley 14 at its free end, which bears upon the said belt, as clearly shown in the accompanying drawings. The discharge end of the concentrator is also provided with a gate 15 and at one side with a short length of pipe 16, which alines and communicates with a vertical member of a siphon-shaped pipe 17, having its opposite end directed over a screen 18, supported by uprights 19, and below the screen and held by the said uprights is a filter 20. The trough 1 and concentrator 7 are supported by suitable legs, and in advance of the gate 15 and located in the said concentrator is a skimmer 21.

In operation mercury is placed behind the cross-slats in the trough 1 and also in the pipe 17, and material to be operated upon is introduced in the hopper 5 and let into the trough 1 by opening the gate 6. The mercury behind the cross-slats 2 catches a portion of the gold of a heavier nature, but the finer particles and flour-gold pass downwardly from the said trough, which is at a considerable slant, and flow into the trough or concentrator 7. The slant of the trough 1 is intended for the purpose of mixing the sand that contains the gold thoroughly with the water, and when the matter being treated, together with the water, reaches the trough or concentrator 7 a small portion of the water and sand may be let out of the said concentrator by opening the gate 15. The closing of the said latter gate will cause the water to rise in the concentrator to nearly a level with the upper edge thereof and also by this means cause the said water to move along very smoothly. By this operation the sand will all go to the bottom, while the fine gold will stay on the surface of the water. This settling of the sand in the concentrator would soon cause the same to fill up, and to prevent this it is carried out by the continuously-moving belt 11 and deposited at a suitable point. The said belt, it has been found by experience, should be constructed of canvas, though other materials can be used, if desired. The skimmer 21 cuts the water at about a quarter of an inch from the surface of the same, the sand all having gone to the

bottom of the concentrator before it reaches the skimmer. The said skimmer carries the gold and water a short distance and causes it to pass out through the pipe 16 into the pipe 17, and in the latter pipe the gold is taken up by the mercury therein, and should any gold still remain in the water which flows out of the mouth of the said pipe 17 it is cast upon the screen 18, which separates the water, and from thence it falls upon the filter 20, which will catch all the stray particles of gold that might escape, so that there is no loss of gold whatever.

The machine can be run by either water, steam, or electric power.

The device is exceptionally simple and will be readily understood by those skilled in the art and in view of the small number of parts can be constructed and sold at a very much reduced price.

It is obviously apparent that many minor changes in the details of construction and arrangement of the several parts might be made and substituted for those shown and described without in the least departing from the nature or spirit of the invention.

Having thus described the invention, what we claim as new is—

1. The herein-described apparatus for the purpose stated, consisting of an inclined trough having transverse strips and provided with discharge-openings between said strips, a concentrator at the discharge end of said trough, said concentrator having a gate at its delivery end, a moving bottom, a discharge-pipe near the top of the delivery end, and a skimming-plate arranged immediately beneath the inlet to said pipe, a mercury-containing siphon into which said pipe discharges, and a screen and filter arranged one below the other beneath the discharge end of the siphon, substantially as set forth.

2. An apparatus for the purpose described, comprising an inclined trough, transverse strips secured to the bottom of the trough to form mercury-receiving pockets, one side of the trough having a series of discharge-openings leading from the pockets, a horizontal concentrator into which the trough discharges, a gate at the delivery end of the concentrator, an endless belt forming a movable bottom for the concentrator and passing out of the same below the bottom of the gate, a skimmer above the belt at the delivery end of the concentrator, a discharge-pipe leading from the concentrator above the skimmer, a mercury-containing siphon into which said pipe discharges, and a screen and filter below the discharge end of the siphon, substantially as and for the purposes specified.

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

SAMUEL H. BROWN.
REILY S. STEELY.

Witnesses:
JOY GUNDY,
JOSEPH R. ROTH.