

No. 763,197.

PATENTED JUNE 21, 1904.

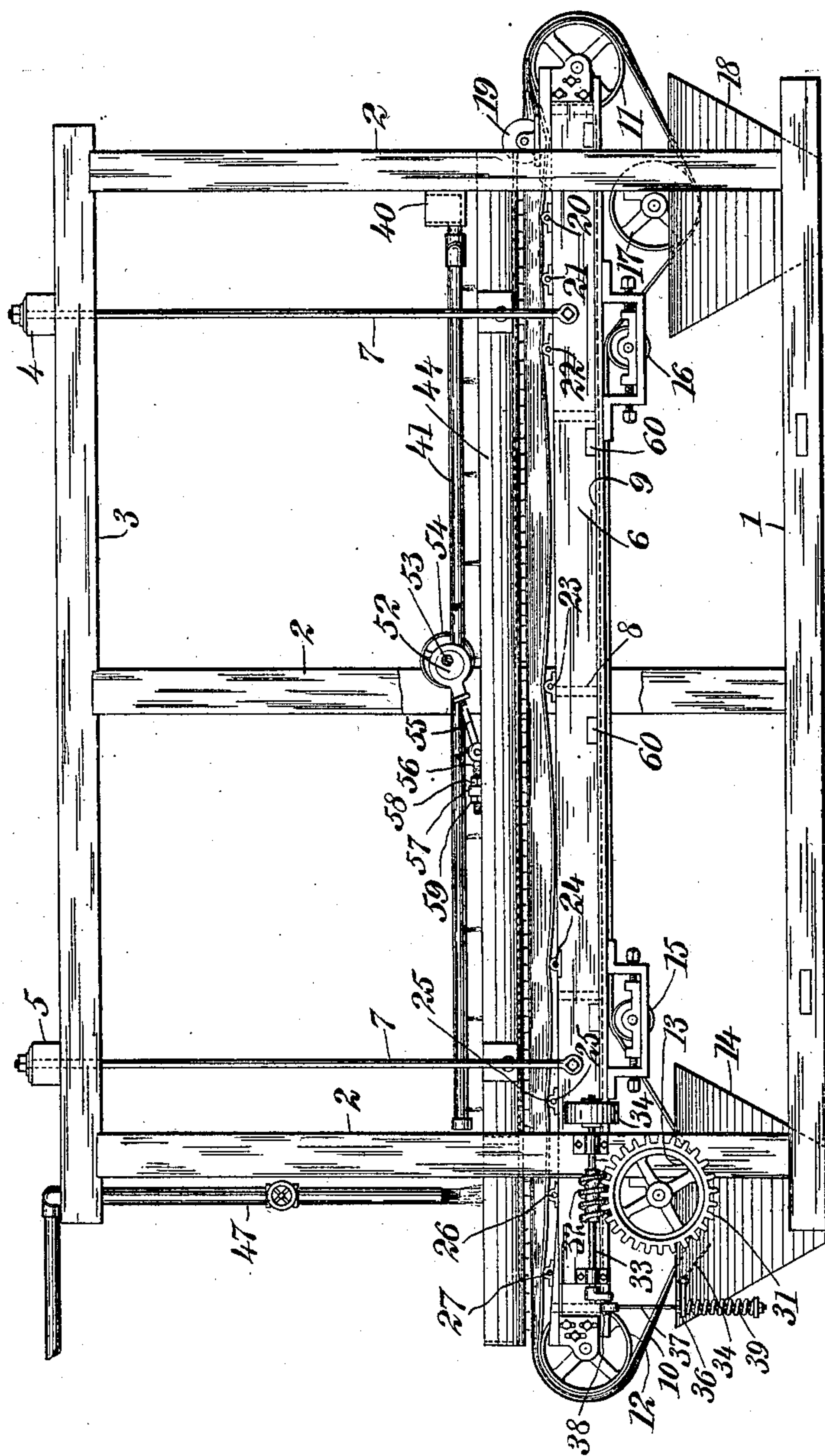
I. F. MONELL.
ORE SLIMER.

APPLICATION FILED OCT. 3, 1903.

NO MODEL.

3 SHEETS—SHEET 1.

Fig. 1.



WITNESSES:
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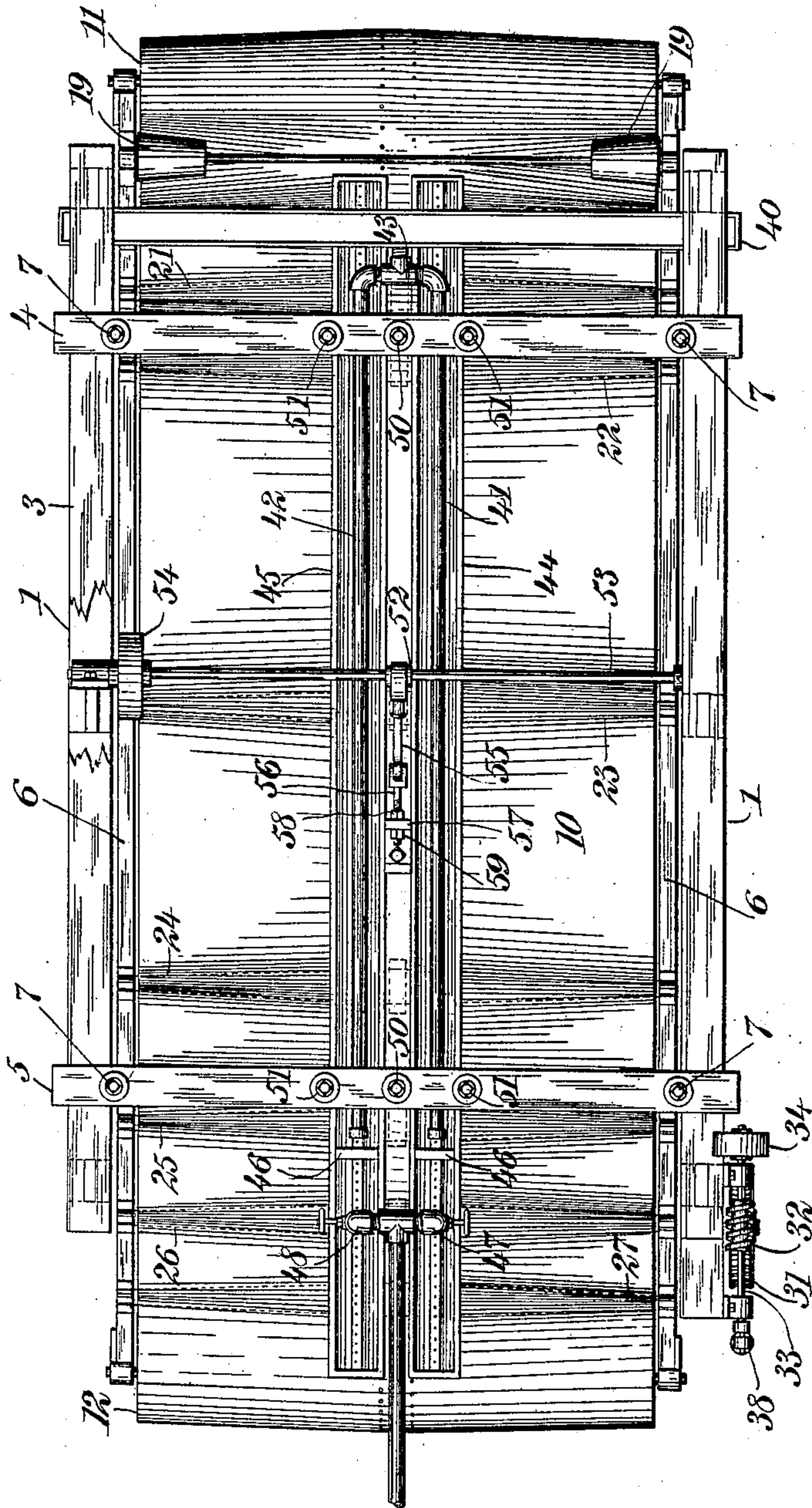
ORE SLIMER.

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3 SHEETS—SHEET 2.

Fig. 2.



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NO MODEL.

3 SHEETS—SHEET 3.

Fig. 3.

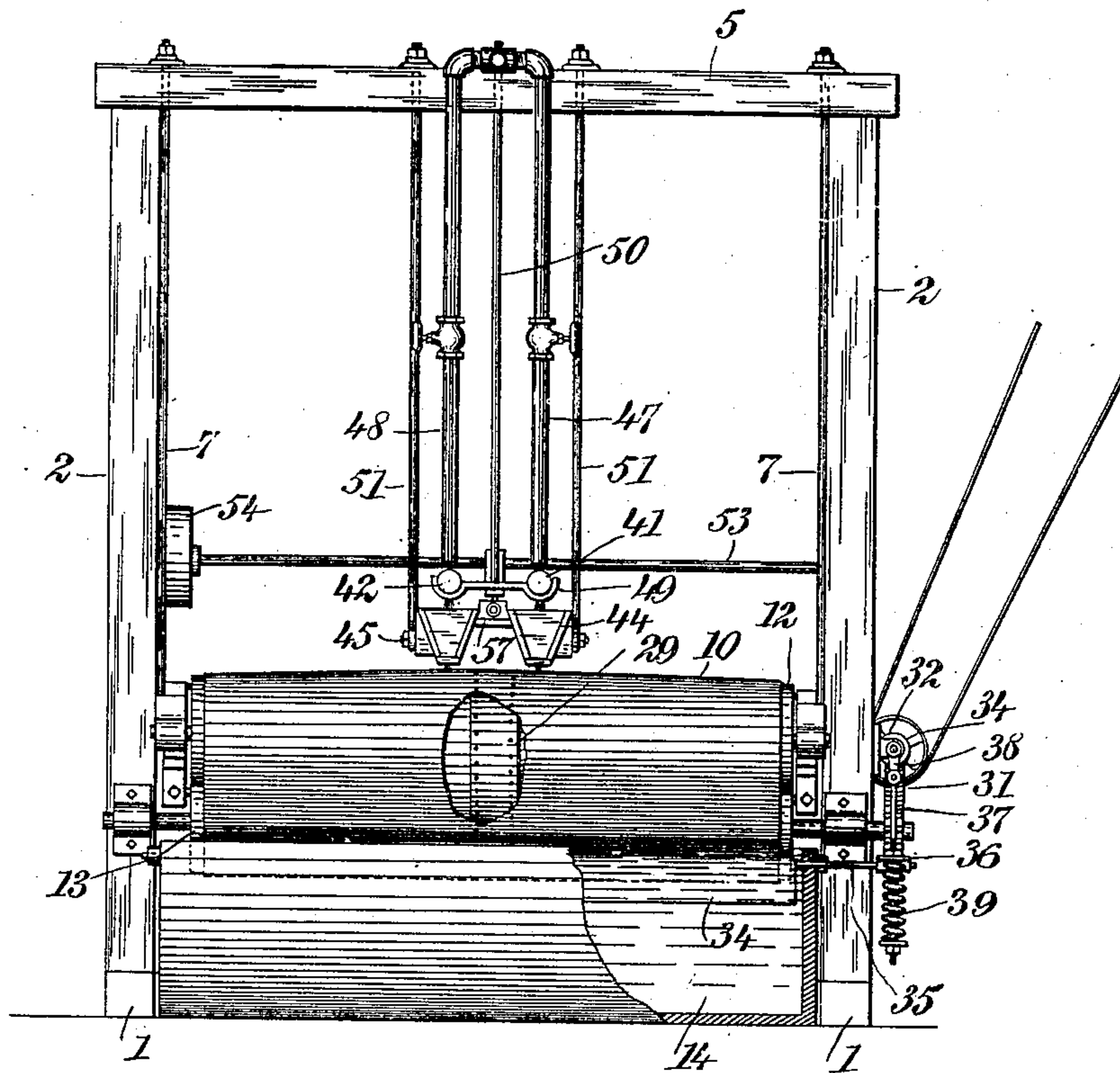


Fig. 4.



Fig. 5.

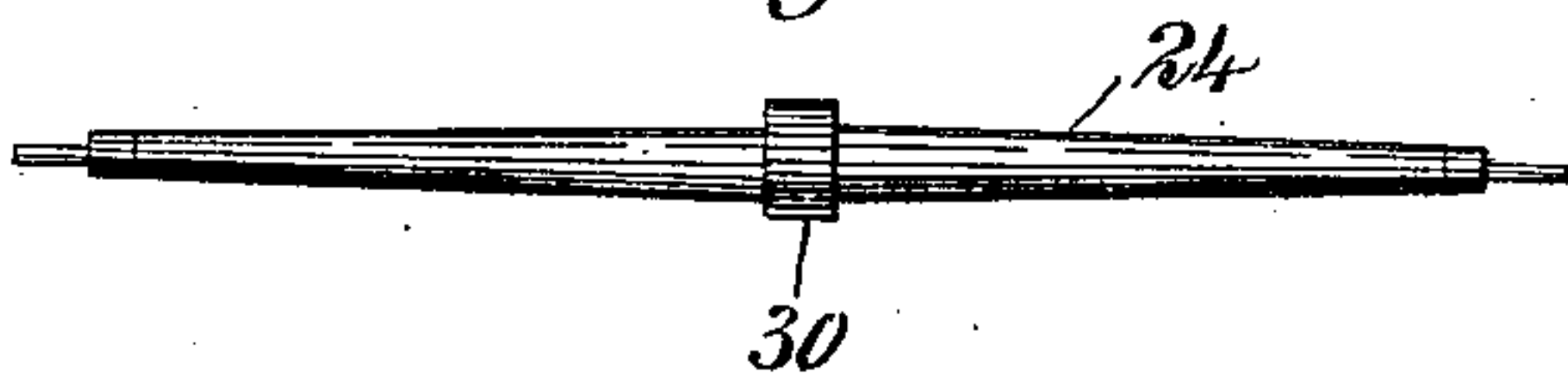
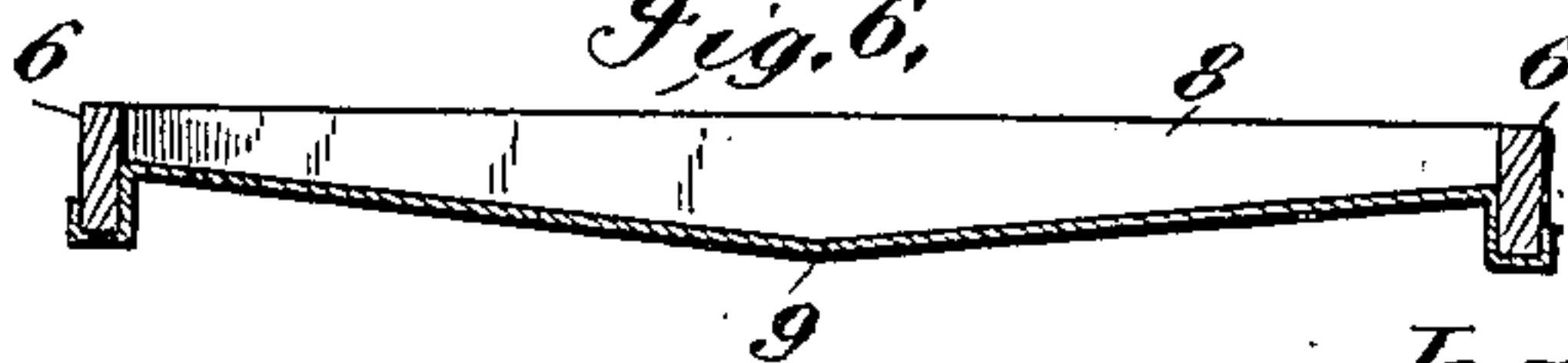


Fig. 6.



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UNITED STATES PATENT OFFICE.

IRA FERRIS MONELL, OF BOULDER, COLORADO.

ORE-SLIMER.

SPECIFICATION forming part of Letters Patent No. 763,197, dated June 21, 1904.

Application filed October 3, 1903. Serial No. 175,591. (No model.)

To all whom it may concern:

Be it known that I, IRA FERRIS MONELL, a citizen of the United States, and a resident of Boulder, in the county of Boulder and State of Colorado, have invented a new and Improved Ore-Slimer, of which the following is a full, clear, and exact description.

This invention relates to improvements in ore-slimers, an object being to provide a slimer of novel construction and so arranged as to quickly and wholly separate fine gold from sand and slimes.

I will describe an ore-slimer embodying my invention and then point out the novel features in the appended claims.

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

Figure 1 is a side elevation of an ore-slimer embodying my invention. Fig. 2 is a plan view thereof. Fig. 3 is an end elevation, partly broken away. Figs. 4 and 5 show certain belt-supporting rollers employed, and Fig. 6 is a detail cross-section of a pan employed.

The main frame of the machine comprises base-beams 1, standards 2, and top beams 3, to which are connected cross-beams 4 5. Supported in the main frame is a belt-frame consisting of side rails 6. As here shown, these side rails are supported by rods or hangers 7, depending from the cross-beams 4 5. At suitable intervals the side rails 6 are connected by cross-pieces 8, which on their lower sides are inclined upward and outward in both directions from the center, and to these cross-pieces and to the side rails is secured a bottom plate 9, of zinc or other suitable metal, and thus the said bottom plate, with the side rails, forms a pan for the tailings.

Traveling over the belt-frame is an endless belt 10, of canvas or like material. This belt travels over drums 11 12 at the opposite ends of the frame, and below the frame the belt extends around a roller 13, operating in a washing-tank 14. Thence the belt passes over idler-rollers 15 16, which are arranged in longitudinally-adjustable bearings, so that the tension of the belt may be regulated.

From the idler 16 the belt passes underneath a washing-roller 17, operating in a supplemental washing-tank 18. The drums 11 12 are tapered from their centers outward in both directions, so as to give a lateral inclination to the belt from the center, the object of which will hereinafter appear. Near the drum or roller 11 at the inlet end of the slimer conical rollers 19 bear upon the belt near its edges, these rollers being designed to press the edges of the belt downward below the top plane of the roller or drum 11. Near the feed end of the belt three rollers 20 21 22 are arranged underneath the belt to support the same. At about the center is another roller 23, supporting the belt, and forward of this roller 23 is a roller 24, and forward of this roller 24 are three rollers 25 26 27. The rollers 26 27 are arranged on wedge-shaped blocks or on an upward incline, so as to incline the belt gradually to the upper surface of the drum or roller 12, which, it will be noted, is above the plane of the roller 27. There is considerable space between the rollers 22 23, a less space between the rollers 23 24, and a still less space between the rollers 24 25. The belt in passing over the several rollers is somewhat slack, and therefore by spacing the rollers as described pockets of various lengths are formed, and the varying force of the water is permitted to carry the sand and slimes over the edge of the belt into the tailings-pan. It will be noted that the roller 24 is slightly below the plane of the rollers 23 25, and by this arrangement a greater force of water-flow will exist between the said rollers 23 24. These several supporting-rollers are tapered from their centers outward in both directions, as clearly indicated in Figs. 4 and 5, and at their centers the rollers are provided with windings 28, designed to engage with a band 29, of leather or similar material, secured to the inner side of the belt at the center. This arrangement will cause sufficient friction to carry the belt along and also will tend to form the pockets or sags in the belt at the sides by directing the center of the belt slightly faster than the parts outward of the center. The winding 30 on the roller 24 is somewhat thicker than the windings 28 on the other rollers. This is for the

purpose of bringing the center of the belt running over the roller 24 in a horizontal plane, with its center on the other rollers, as it will be understood that said roller 24 is below the plane of the other rollers.

On the shaft of the roller 13 is a worm-wheel 31, engaged by a worm 32 on a shaft 33, to which is attached a driving or band pulley 34.

It is desirable to keep the water in the washing-tank 14 in constant agitation. This may be done by any suitable means. I have here shown, however, an agitator consisting of a metal plate 34, having one of its trunnions 35 extended outward and provided with an arm 36 at its end, the said arm being at right angles to the trunnion. This arm 36 is provided with an opening through which an agitating-rod 37 freely moves. The upper end of this rod 37 is connected to a crank 38 on the shaft 33, and between the nut on its lower end and the arm 36 is a coiled spring 39, which will cause a quick movement of the agitator. The rotary motion of the shaft 33 will operate the roller or drum 13 to move the belt, and during this operation the crank 38, in connection with the spring 39, will operate the agitator. This agitator, it will be noted, is at the front side of the roller 13, so that water will be splashed against the belt at its downward incline.

Extended transversely of the belt 10 at the inlet end is a stock-trough 40, which communicates at the center with pipes 41 42, extended lengthwise of the belt. These pipes are designed to carry the stock which is discharged through fine perforations in the under sides of the pipes. The pipes are connected to the trough 40 by a T 43. Underneath the pipes 41 42 are stock-pans 44 45. These pans are substantially V-shaped in cross-section and are provided at the bottom with fine perforations suitably spaced apart. Near the outlet end of the slimer the pans are provided with partitions 46, designed to form end walls of fresh-water receptacles in said pans, the fresh water being discharged into the pans through pipes 47 48, provided with suitable cut-off valves. The pipes 41 42 are supported in cross-bars 49 on the lower ends of hangers 50, extending downward from the cross-beams 4 5. The pans 44 45 are connected together near the ends, and they are supported so as to have a slight reciprocating movement lengthwise by means of rods 51, extended from the cross-beams 4 5. Lengthwise reciprocating movement is imparted to the pans by means of an eccentric 52 on a shaft 53, provided with a band-pulley 54. An eccentric-rod 55 has pivotal connection with a bolt 56, engaging in a block 57, arranged between the pans and attached to the same. Nuts 58 59 engage with the bolt at opposite sides of the block. When these nuts are screwed tightly against the block, a direct and constant re-

ciprocating motion will be imparted to the pans. If a shock motion is desired, the nuts may be moved outward from the block, so as to permit of a lost motion between the nuts.

In the operation the stock is placed in the trough and then discharges into the primary stock-pipes 41 42, and from these pipes it discharges through the small perforations into the pans and from these pans on to the belt. The object in providing a reciprocating motion for the pans is to evenly distribute the stock on the belt. The water carried with the stock will wash the sand and slimes over the edges of the belt into the pan below, from which the tailings may be discharged through openings 60. The gold will be carried along in the meshes of the belt, and what little sand may be carried beyond the end of the pipes 41 42 will be thoroughly washed back by the water from the fresh-water pipes 47 48, passing into the fresh-water compartments of the stock-pans. The gold will then be carried through the washing-tank 14, and whatever gold remains on the belt after passing out of said tank 14 will be washed out in the tank 18.

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

1. An ore-slimer comprising a main frame, a belt-frame supported in the main frame, rollers at the ends of said belt-frame, the said rollers being tapered from their centers outward, small rollers arranged between the first-named rollers, and tapered from their centers outward, an endless belt movable over the several rollers, and means for distributing stock onto the belt.

2. An ore-slimer comprising a belt-frame, rollers arranged at the end of said belt-frame and inclined from their centers outward in both directions, small rollers arranged between the first-named rollers and tapered from their centers outward, the said last-named rollers being variously spaced apart, an endless belt passing over the rollers, means for distributing stock onto the belt, and a washer for cleaning the values from the belt.

3. An ore-slimer comprising a belt-frame, rollers arranged at the ends of said frame and tapered from their centers outward in both directions, small rollers arranged between the first-named rollers and tapered from their centers outward, the said small rollers being variously spaced apart, an endless belt movable over the rollers and forming pockets between certain of the said small rollers, means for distributing stock on the belt, a washing-tank, and a roller operating in said tank and around which the belt passes.

4. An ore-slimer comprising a frame, rollers arranged at the ends thereof and tapered from their centers outward, small rollers arranged on the frame between the first-named rollers, the said small rollers being tapered from their centers outward, and being variously spaced apart and on varying horizontal

planes, an endless belt movable over said rollers, means for distributing stock onto said belt, and means for washing the values from the belt.

5 5. An ore-slimmer comprising a frame, rollers arranged at the ends thereof and tapered from their centers outward, small rollers supported in the frame between the first-named rollers and tapered from their centers outward, the said small rollers having bands of
10 rubber or the like at their central portions, an endless belt movable over the rollers and consisting of fabric, and a belt of leather or the like secured to the inner side of said endless
15 belt for engaging with the rubber bands on said small rollers.

6. An ore-slimmer comprising a frame, rollers arranged at the ends thereof and tapered from their centers outward, small rollers arranged in the frame between the first-named
20 rollers and tapered from their centers outward, washing-tanks arranged underneath the frame near the ends, rollers operating in said washing-tanks, an endless belt movable over
25 all of said rollers, and means for distributing stock onto the belt.

7. An ore-slimmer comprising an endless traveling belt inclined downward and outward from its center transverse of its line of movement in both directions, supporting-rollers
30 for said belt, the said belt having sufficient slack to form pockets or sags between certain of the rollers, means for distributing stock onto the belt, and means for washing the values
35 therefrom.

8. An ore-slimmer comprising an endless traveling belt inclined laterally from its center in its upper stretch, stock-pans extended length-

wise above the belt and having perforations for the discharge of material onto the belt, 40 and perforated stock-pipes extended over said pans.

9. An ore-slimmer comprising an endless traveling belt inclined laterally from its center in both directions, perforated stock-pans arranged above the upper stretch of the belt at
45 opposite sides of its longitudinal center, means for causing a reciprocating longitudinal movement of said pans, and perforated stock-pipes extended over the pans. 50

10. An ore-slimmer comprising an endless traveling belt, the top stretch of which is inclined laterally from the center in both directions, perforated stock-pans extended along
55 said belt at opposite sides of its longitudinal center, the said pans having compartments for fresh-water pipes for discharging fresh water into said compartments, and perforated stock-pipes extended over said pans.

11. In an ore-slimmer, an endless belt, supporting-rollers therefor, a washing-tank, a
60 roller in the tank, around which the belt passes, a plate in the tank and having a trunnion extended through one end of the tank, an arm on the trunnion, a rod movable through said arm, 65 a spring arranged between the lower end of the rod and the arm, and gearing having connection with the upper end of the rod.

In testimony whereof I have signed my name to this specification in the presence of two sub- 70 scribing witnesses.

IRA FERRIS MONELL.

Witnesses:

RALPH P. METCALF,
CHARLES C. BROMLEY.