No. 796,780. PATENTED AUG. 8, 1905.

J. L. WEAVER.

APPARATUS FOR PLACER MINING.

APPLICATION FILED MAY 8, 1905.

5 SHEETS—SHEET 1.

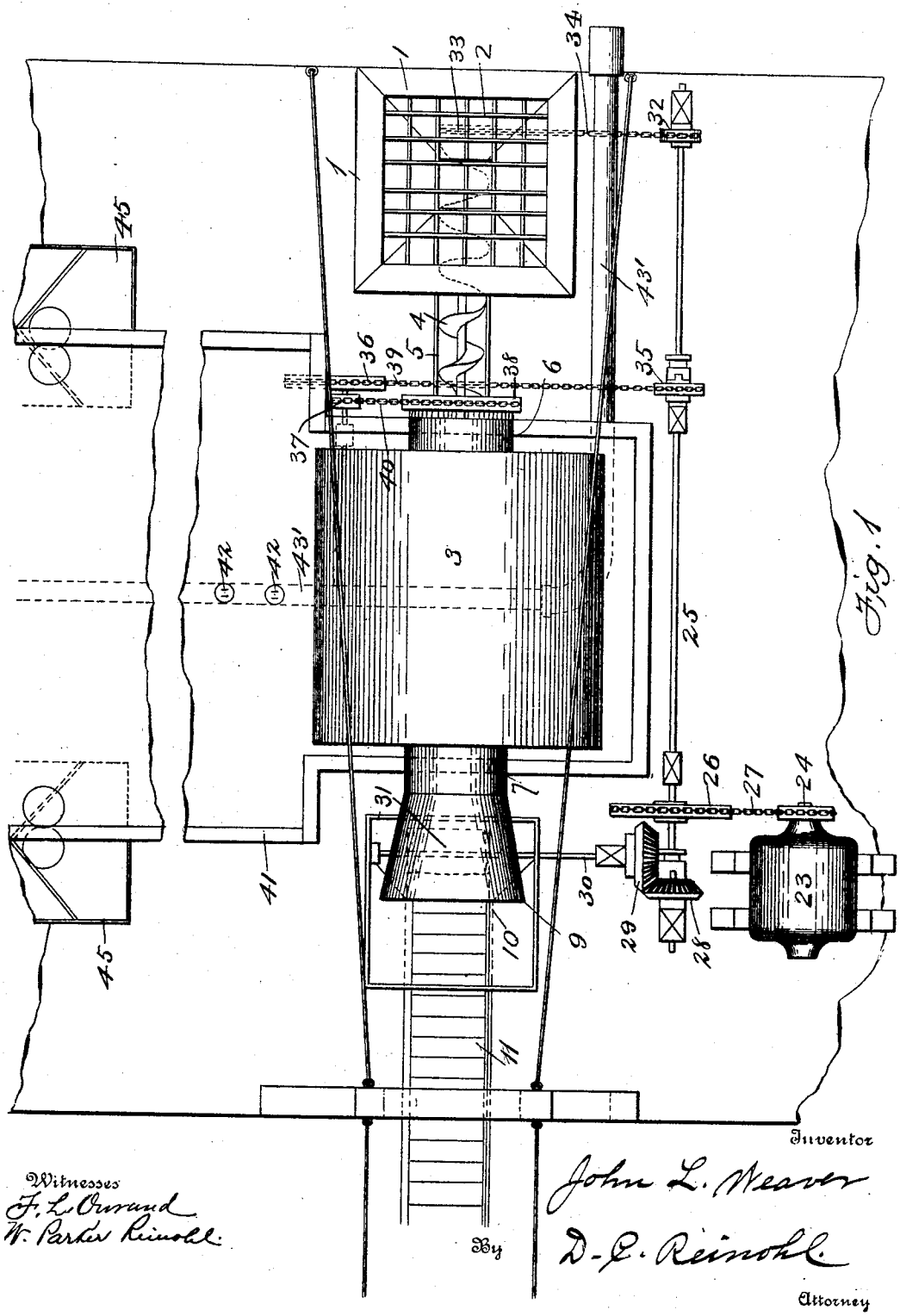


Fig. 1

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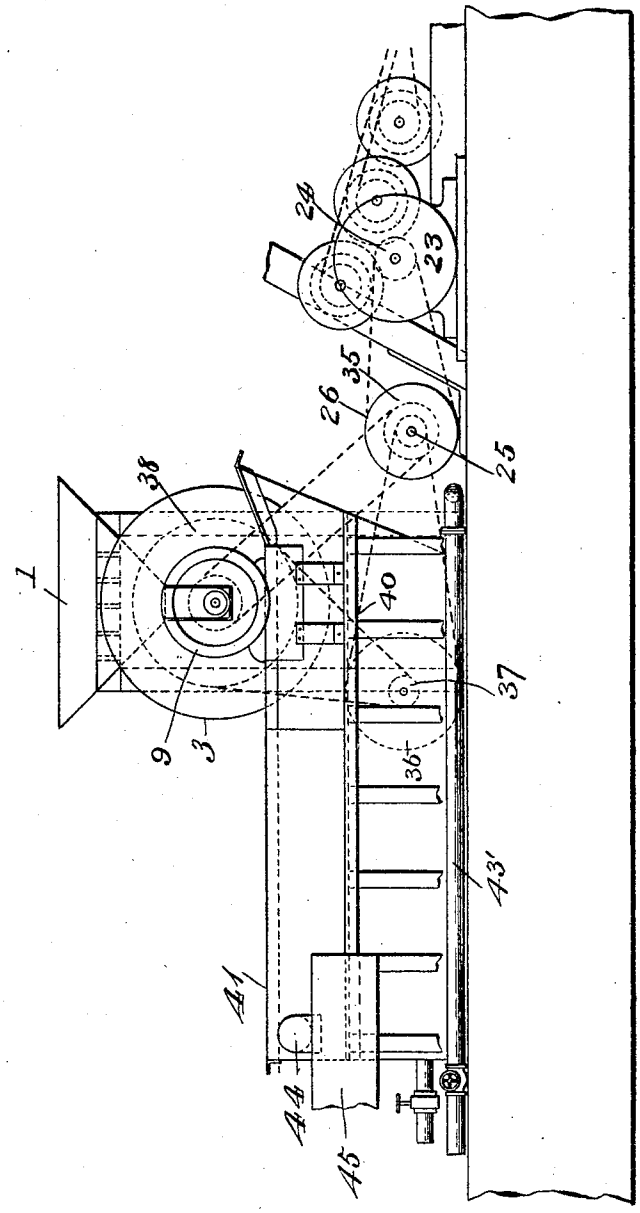
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5 SHEETS—SHEET 2.

Fig. 2.



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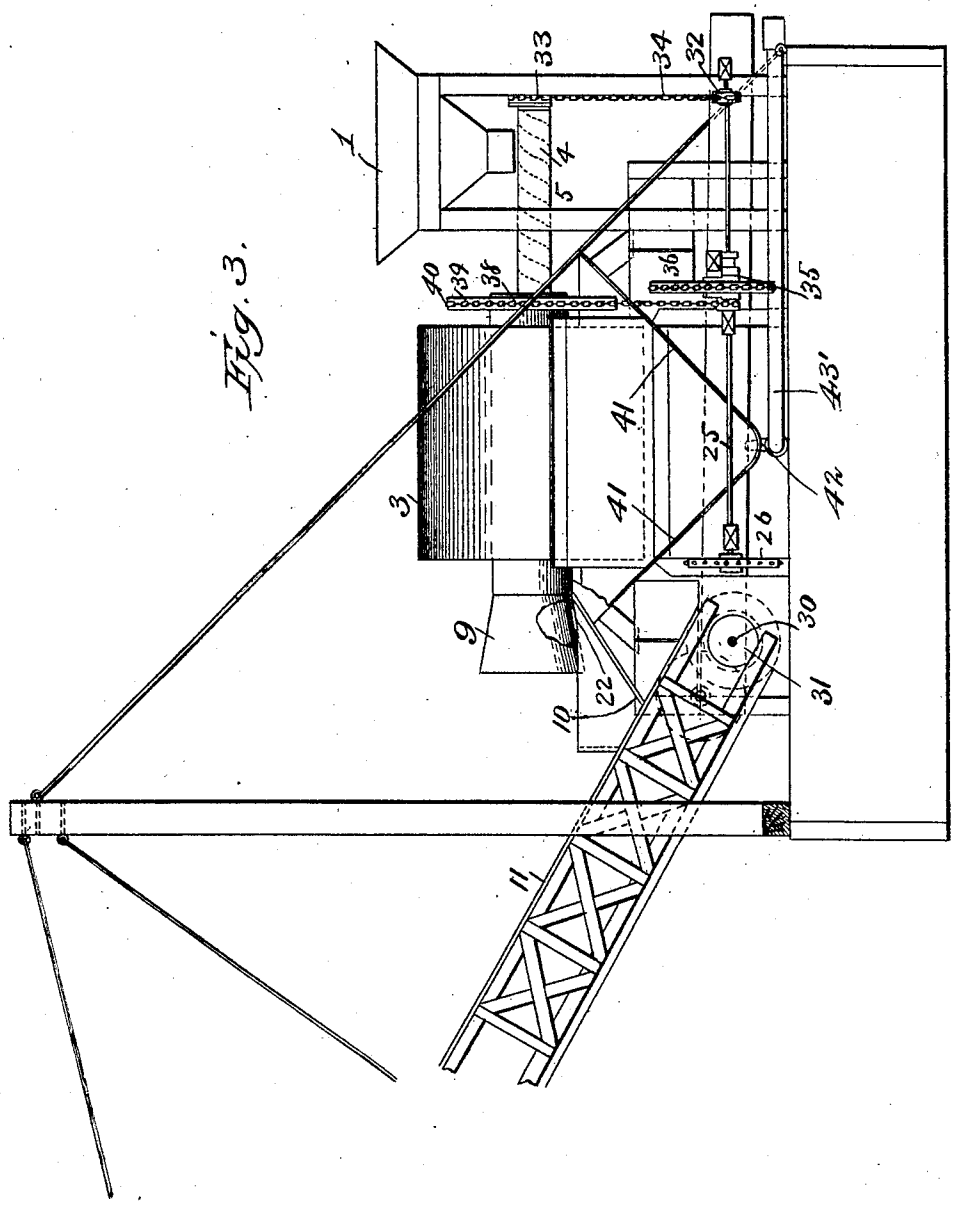
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5 SHEETS—SHEET 3.

Fig. 3.



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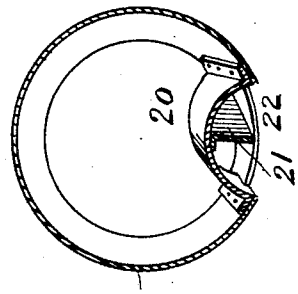


Fig. 5.

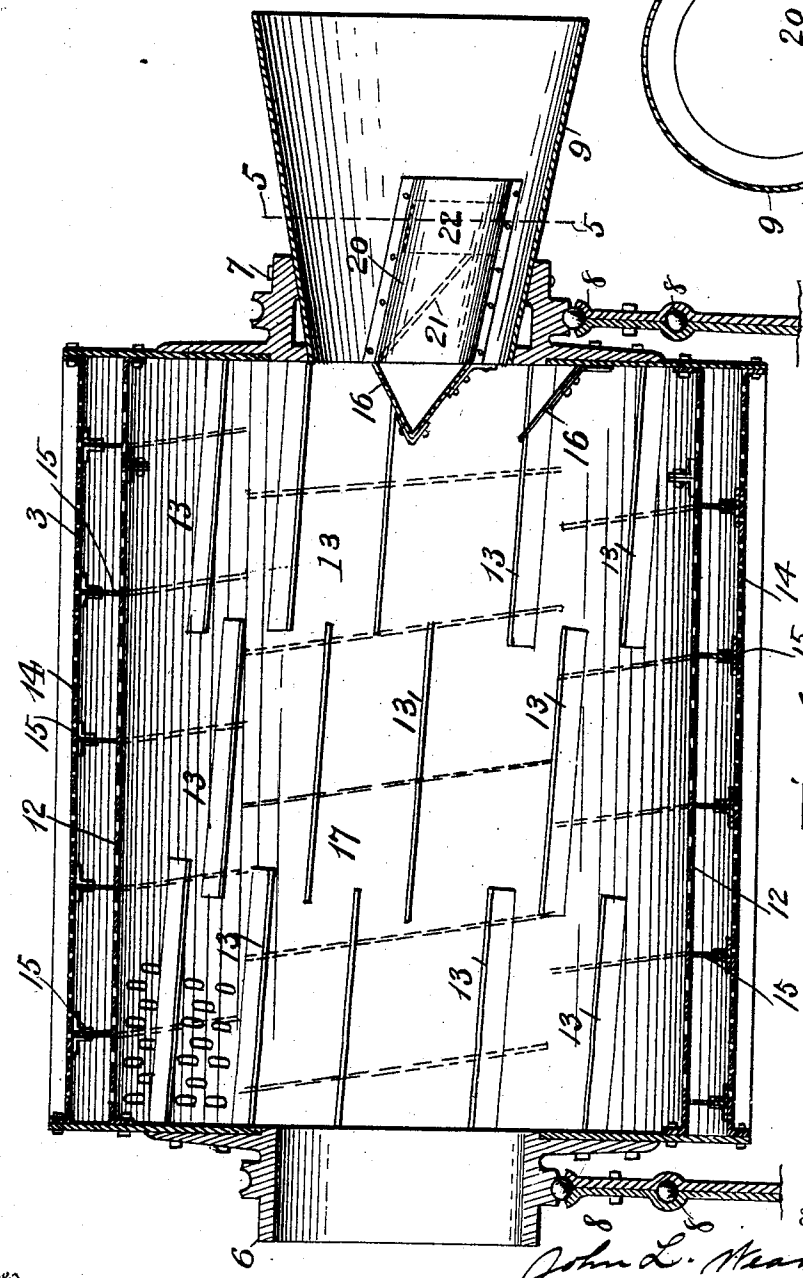


Fig. 4.

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5 SHEETS—SHEET 5.

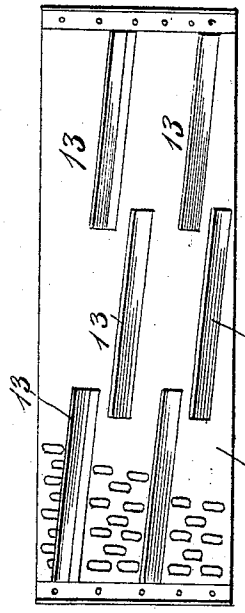


Fig. 7.

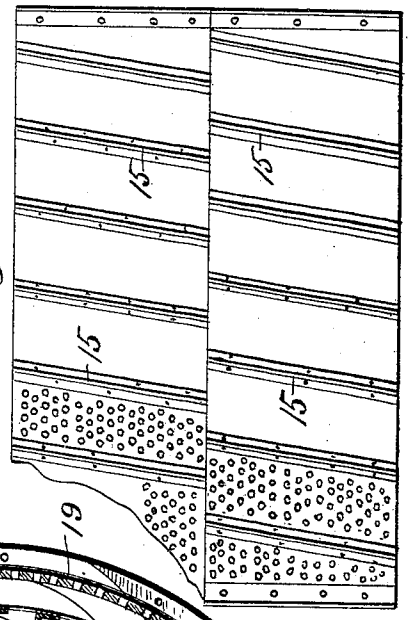


Fig. 8.

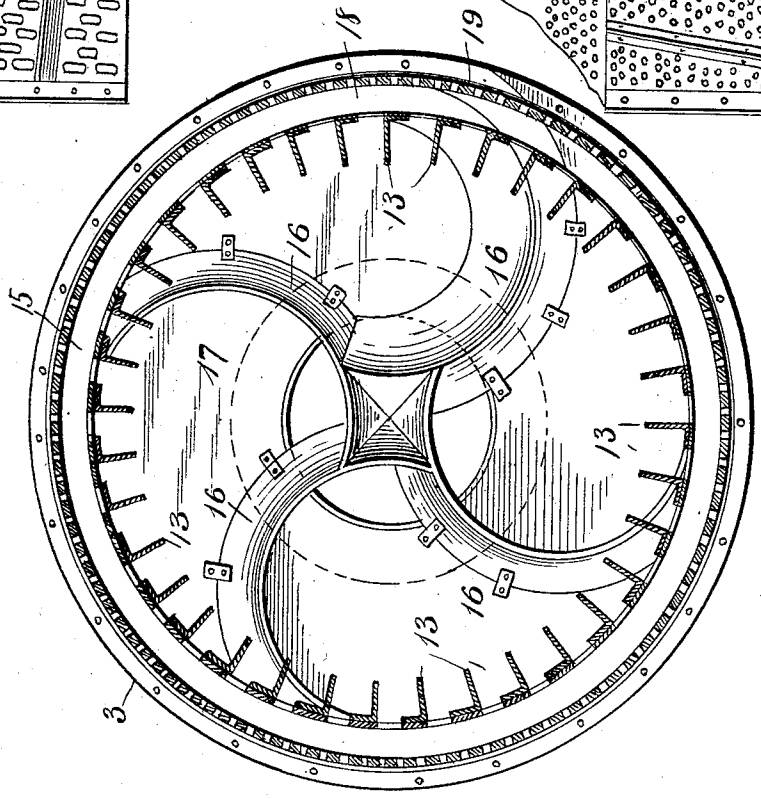


Fig. 6.

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UNITED STATES PATENT OFFICE.

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APPARATUS FOR PLACER-MINING.

No. 796,780. Specification of Letters Patent. Patented Aug. 8, 1905.

Application filed May 8, 1905. Serial No. 259,340.

To all whom it may concern:

Be it known that I, JOHN L. WEAVER, a citizen of the United States, residing at Boise, in the county of Ada and State of Idaho, have invented certain new and useful Improvements in Apparatus for Placer-Mining; and I 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.

My invention relates to apparatus for placer-mining, has especial reference to the treatment of metalliferous earth for the recovery or separation of precious metals therefrom, and consists in certain improvements in construction, which will be fully disclosed in the following specification and claims.

In the accompanying drawings, which form part of this specification, Figure 1 represents a top plan view of apparatus embodying my invention; Fig. 2, an elevation of the receiving end of the screen or "grizzly;" Fig. 3, a side elevation of the same, including the stacker; Fig. 4, a vertical longitudinal section of the screen detached and on an enlarged scale; Fig. 5, a sectional end view of the discharge-spout of the screen on line 5 5, Fig. 4; Fig. 6, an end view of the screen with the head removed; Fig. 7, a detail, on a reduced scale, showing the flights of the inner screen; and Fig. 8, a like view showing the sectional Archimedean screw on the outer screen.

Reference being had to the drawings and the designating characters thereon, the numeral 1 indicates the feed-hopper, which is provided with a horizontal screen 2 in the bottom thereof for arresting bodies that are too large to pass through the rotary screen or grizzly 3. The material which passes through the screen 2 is fed by a worm 4 in a trough 5 and delivered to the rotary screen through the hollow extension or trunnion 6. At the opposite end of the rotary screen is a like hollow trunnion 7, and the trunnions are supported in ball-bearings 8 8 at each end thereof, and to the trunnion 7 is secured an outwardly-flaring spout 9, through the open end of which the coarse material which will not pass through the perforated walls of the screen is discharged by gravity. This material is delivered upon an apron 10, from which it flows or rolls down upon an endless conveyer or stacker 11 and is conveyed to a suitable place.

The rotary screen or grizzly is composed of concentric perforated cylinders. An inner coarsely-perforated cylinder 12 is provided with radially-projecting flights 13, (shown in Figs. 4 and 7,) inclined toward the discharge end and arranged in tiers which overlap at their adjacent ends, and in the rotation of the screen carry the material up to the top of the cylinder, when it falls by gravity, is taken up by the next tier of flights, and by their inclination is advanced from the feed end to the discharge end of the screen. The outer finely-perforated cylinder 14 is provided with a spiral vane or Archimedean screw 15, arranged in alternating sections, (shown in Figs. 4 and 8,) which feeds the material which passes through the perforations in the inner cylinder along the chamber 18 between the outer surface of the inner cylinder and the inner surface of the outer cylinder from one end to the other, the material sliding along and dropping from one section to another instead of being raised and dropped, as under the action of the flights 13 on the inner cylinder.

The vane or blade of the screw 15 is of a depth equal to the transverse depth of the chamber 18 between the two cylinders 12 and 14, and thereby forms an effective support for the inner cylinder and the material therein.

At the discharge end of the screen are four approximately volute and flaring-sided blades or vanes 16, which conduct the material toward the trunnion 7 and the discharge-spout 9. Three of said vanes are used in connection with the inner chamber 17 of the screen and one with the chamber 18 between the concentric cylinders, as shown at 19 in Fig. 6.

The material from the outer chamber 18 is conducted through a covered passage 20, in which is an angular, radial, and longitudinal partition 21 to prevent the material which is not discharged from the passage 20 in the revolution of the spout 9 flowing or passing back into the chamber 18, and this material from the chamber 18 and the passage 20 is discharged through an opening 22 in the wall of the discharge-spout 9 and may be deposited in a separate receptacle, such as a sluice-box, or delivered to the apron 10 and stacker 11.

23 indicates a motor, which may be of any preferred form or type and is provided with a driving-pulley 24.

25 is the power-shaft, on which is a pulley 26, connected to pulley 24 by a belt 27. A bevel-pinion 28 on shaft 25 gears with a like pinion 29 on shaft 30 and drives the endless conveyer or stacker 11 through drum 31.

(Shown in dotted lines in Figs. 1 and 3.) The feed-worm is revolved by pulley 32 on shaft 25, pulley 33, and belt 34, and the screen is revolved by pulleys 35 36 37 38 and belts 39 and 40, and all of said parts are operated synchronously or in unison.

The material to be treated is supplied to the hopper, with its contained water, by any suitable means, such as are well known and in use for placer-mining. The material which passes through the outer cylinder of the screen is deposited in a tank 41, provided with suitable amalgamating-plates, (not shown,) is agitated by streams or jets of water projected from nozzles 42 on a supply-pipe 43, the precious metals collected or deposited on the amalgamating-plates, and the earthy matter flows off through exits 44 into suitable sluice-boxes 45, in which the magnetic ores contained in the earth are separated therefrom by any suitable means. (Not shown.) Preference is, however, given to magnetic separators, which will collect or separate the ore while the body of water charged with the metalliferous earth is in transit to the tailings-receptacle. (Not shown.)

Having thus fully described my invention, what I claim is—

1. A screen provided with an inner foraminous cylinder having series of angular or inclined flights on the inner side overlapping at their adjacent ends, an outer and concentric foraminous cylinder or wall, a screw between said walls, approximately volute discharge-vanes at one end, and a spout having a central discharge for the coarse material, and provided with an opening in its wall for the discharge of the finer material.

2. A screen provided with an inner foraminous cylinder or wall having inclined flights arranged in series and overlapping at their adjacent ends, an outer foraminous cylinder or wall, an Archimedean screw arranged in sections between said walls, approximately volute vanes having flaring sides at one end, and an outwardly-flaring spout having a central discharge for the coarse material, and provided with an opening in its wall for the discharge of the finer material.

3. A screen composed of an inner and an outer foraminous cylinder, means for moving the material toward the discharge end of the screen, approximately volute vanes at one end for conducting the material out of the screen, a flaring spout provided with two discharge-passages, one of which passages is provided with a detaining-pocket.

4. A screen composed of two concentric foraminous cylinders or walls, means for supplying material to the screen, and a discharge-spout provided with a separate passage having a detaining-pocket therein formed by a radial longitudinal partition in said separate passage.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN L. WEAVER.

Witnesses:
BENJ. A. DARE,
B. H. GUERR.