

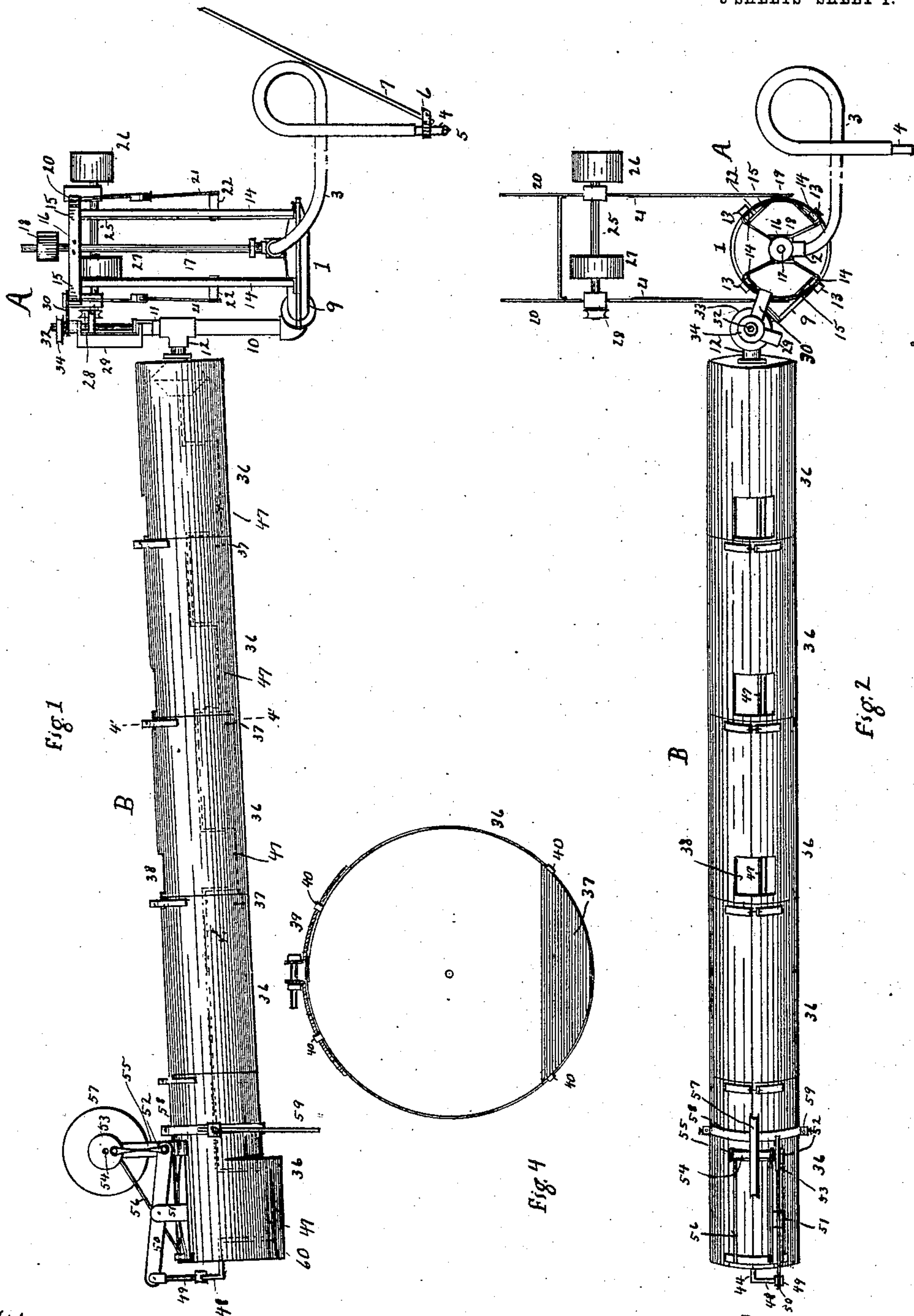
No. 855,200.

PATENTED MAY 28, 1907.

J. E. PENNICK & J. O. HALE.
PORTABLE PLACER MINING MACHINE.

APPLICATION FILED MAR. 10, 1906.

3 SHEETS—SHEET 1.



Witnesses
J. T. Fisher
C. Rosen

Inventors
James C. Pennick
John O. Hale
By J. A. Rosen atty.

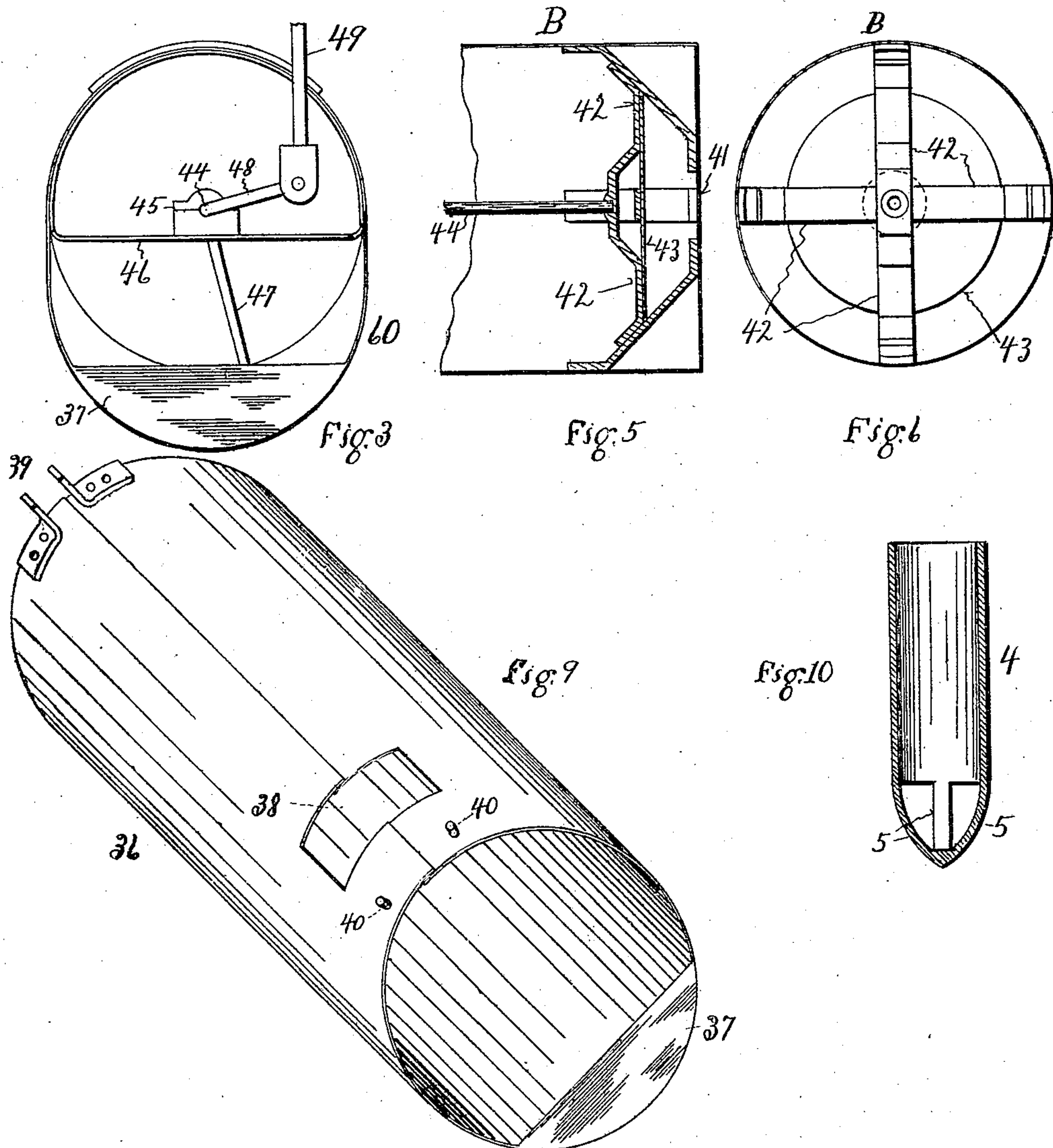
No. 855,200.

PATENTED MAY 28, 1907.

J. E. PENNICK & J. O. HALE.
PORTABLE PLACER MINING MACHINE.

APPLICATION FILED MAR. 10, 1906.

3 SHEETS—SHEET 2.



Witnesses
E. Rosen
John A. Hulit

Inventors
James E. Pennick
John O. Hale
By *J. L. Rosen, Atty*

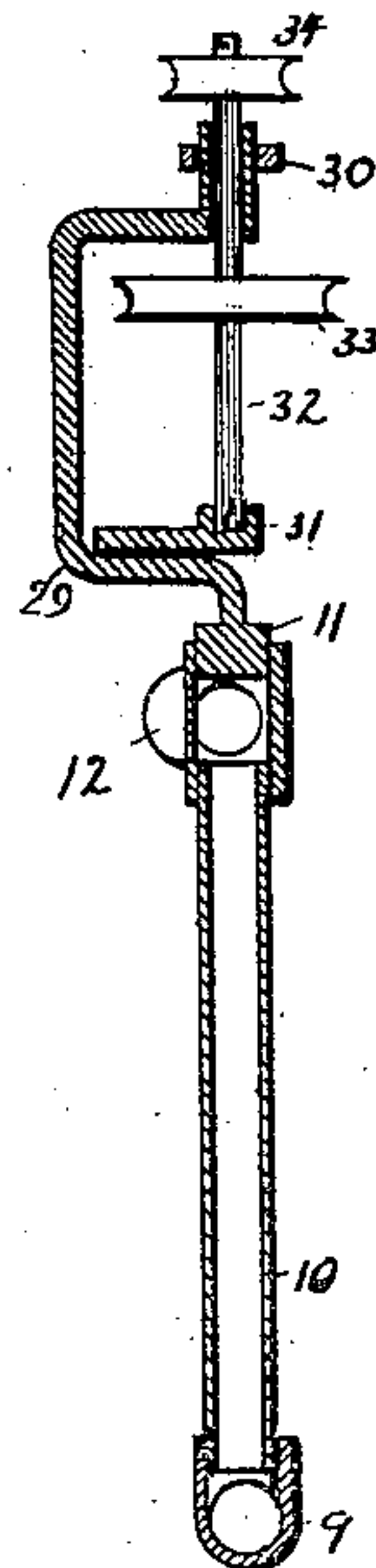
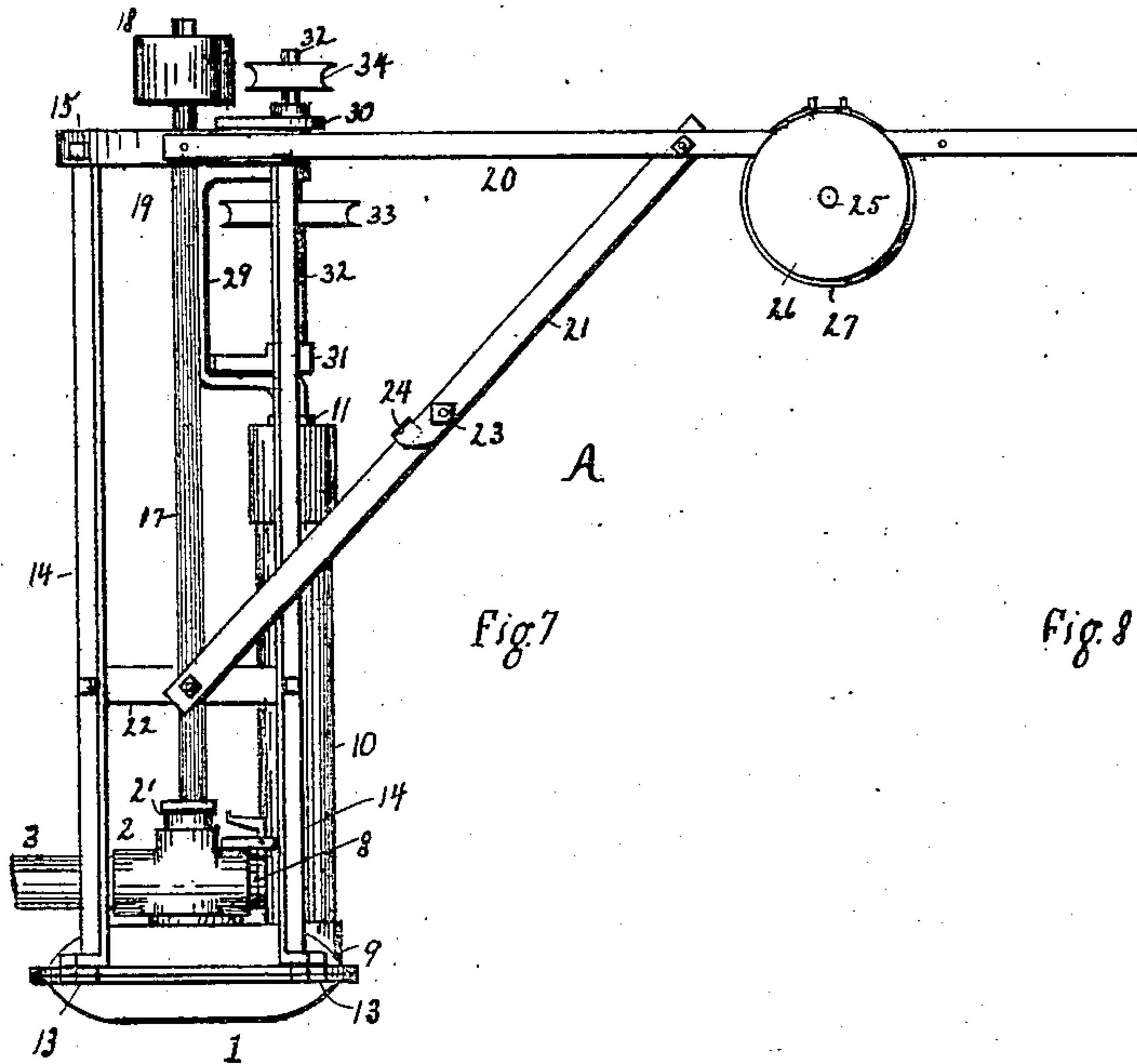
No. 855,200.

PATENTED MAY 28, 1907.

J. E. PENNICK & J. O. HALE.
PORTABLE PLACER MINING MACHINE.

APPLICATION FILED MAR. 10, 1906.

3 SHEETS—SHEET 3.



Witnesses

J. T. Fisher
G. J. Rosen

Inventors

James E. Pennick
John O. Hale
By J. A. Rosen atty.

UNITED STATES PATENT OFFICE.

JAMES E. PENNICK AND JOHN O. HALE, OF TOPEKA, KANSAS.

PORTABLE PLACER-MINING MACHINE.

No. 855,200.

Specification of Letters Patent.

Patented May 28, 1907.

Application filed March 10, 1906. Serial No. 305,216.

To all whom it may concern:

Be it known that we, JAMES E. PENNICK and JOHN O. HALE, citizens of the United States, residing at Topeka, in the county of Shawnee and State of Kansas, have invented new and useful Improvements in Portable Placer-Mining Machines, of which the following is a specification.

The invention is a placer mining machine made up in sections and otherwise having parts which are adapted to be folded up together for purposes of transportation by such crude means as are available in mountainous districts, and which may be carried conveniently from place to place, as by the miners themselves or by horses or burros. And the invention consists of the parts, improvements, and combinations hereinafter set forth and claimed.

In the drawings accompanying and forming part of this specification and in the description thereof, we have shown the invention in its preferred form and the best mode of applying the principles thereof; but it is to be understood that the invention itself is not confined to these drawings and the description of the drawings, that it may be applied to other uses, that parts and combinations thereof as herein separately claimed may be used with or without the other devices of similar general nature to those shown herein, and that we contemplate changes in form, proportions, materials, arrangement, the transposition of parts and the substitution of equivalent members without departing from the spirit of the invention.

Figure 1 is a side elevation of the machine complete showing one side of the pump. Fig. 2 is a plan view thereof. Fig. 3 is an end view of the sluice-box. Fig. 4 is an enlarged section through the line 4'-4' of Fig. 1. Fig. 5 is a sectional view of the upper end of the sluice-box, and Fig. 6 is a view thereof from the inside. Fig. 7 is an elevation view of the other side of the pump. Fig. 8 is a sectional view of the means for pivotally attaching the sluice-box and the means for operating same to the standard or frame of the pump. Fig. 9 is a perspective view of one section of the sluice-box. And Fig. 10 is a sectional view of the intake nozzle for the pump.

Like reference letters and numerals indi-

cate like or corresponding parts throughout the several views.

The rotary suction pump 1 has its inlet 2 from above and its outlet 9 at the side, thereby the sand, gravel, and other heavy substances will be more positively forced through the pump and into the sluice-box; to the inlet is attached a hose 3 of any suitable length, and to the other end of the hose is attached a nozzle of peculiar construction as indicated in Fig. 10 and consisting of a tube having a number of prongs joining at their outer ends, the purpose being to have a nozzle which can be placed down into the pockets in the rocks and in the beds of streams and suck up the contents thereof and which at the same time is strong enough to withstand the hard usage to which it is subjected. The pump is connected to an upright pipe 10 which has its upper end plugged, 11, and has a side opening 12 by which the contents of the pump are discharged into the upper end of the sluice-box which is attached thereto. To a number of lugs 13 on the pump are secured a number of standards or upright rods 14, 14, on the upper ends of which are secured the top-frame 15 having a bearing 16 for the pump-shaft 17 to the upper end of which is keyed the pulley 18 by which it is driven.

Pivoted at 19 to opposite sides of the upper frame 15 are the rods 20, 20, which are supported by the two braces 21, 21, the lower ends of which are pivoted to the bars 22, 22 secured to the uprights 14, 14. These brace rods are jointed, as at 23, with a lip 24 on one overlapping the other, so as to be foldable to permit the rods 20 to be folded down against the pump frame. In suitable boxing on the rods 20, 20 is a shaft 25, carrying pulleys 26 and 27, and the sheave or rope-pulley 28. From the upper end of the pipe 10 is extended a bracket 29, which projects pivotally through a bracket 30 secured to and extending out from the upper frame 15. A bearing 31 in bracket 29 forms the lower support of a shaft 32 which extends up through the upper bearing end of the bracket 29, so that bracket 29 and shaft 32 are movable independently of each other. On shaft 32 are the two rope-pulleys 33 and 34. The lower end of the pipe 10 is threaded and movable in the upturned end of the pump outlet. By this means the pipe 10 and

bracket 29 may be turned at any desired angle so as to permit the sluice-box to extend out from the pump frame at the desired angle, but without disturbing the connections of the pulleys 34 and 33 which are the medium between the main drive shaft 25 and the agitator in the sluice-box.

The sluice-box is made up of a number of sections, each section being made in simple form of galvanized sheet-iron bent into cylindrical form, the meeting edges being left loose. At the lower end is a riffle 37, and extending out from the sides are a number of pins 40, 40, adapted to engage in corresponding holes in the joining end of the next section. Also at the other end and where the joining ends overlap, are the lugs 39, 39 secured to the meeting edges of the same section, by which, with a bolt, the joining ends may be clamped rigidly together. Above each riffle is a hand-hole 38. At the upper end of the sluice-box is a hole 41 through which the contents from the pump are discharged thereinto, and near said hole is a battering plate or board 43 firmly secured by means of a spider 42. Extending the length of the sluice-box is a rod 44 having its upper bearing in the spider 42 and its lower bearing in the boxing 45 on the brace 46. Above each riffle 37, the rod 44 has a downward dip or extension 47, to agitate the contents above said riffle when the agitator or rod is oscillated. The lower end of rod 44 has a crank arm 48 connected by link 49 to one end of lever 50 pivoted to a bracket 51 and having its other end connected by a link 52 to a wrist pin in the crank-disk 53 on shaft 54 held on suitable standards 55 reinforced by braces 56, 56 and said shaft having a rope pulley 57 by which it is driven. At a suitable point along the lower end of the sluice-box is a band 58 clamped thereon by any suitable means as by a bolt in the same manner as the lugs 39, 39 are fastened together, and to this band are secured suitable rods 59, 59, by which the sluice-box may be supported at its lower end. These rods may be adjustably secured in the band by set-screws. The last riffle is of extra depth, 60, and herein may be placed mercury as an additional safeguard against the escape of the gold.

The purpose of the rods 20, 20 is to sustain any suitable driver, as a gas engine, or any other suitable driving mechanism may be employed. The nozzle 4 may be attached to a long pole or handle 7 by a clamp 6, whereby it may be conveniently used. A belt may connect pulley 27 with pulley 18; a rope or suitable medium may connect pulley 28 with pulley 34, and another similar connection may extend between pulley 33 and pulley 57. Operation of pulley 57 obviously has the effect of moving the paddles 47, 47, to and fro, and thereby agitating the contents above the riffles as they pass along through the sluice-

box. By driving the pulley 26, therefore, it is now clear that both the pump and the agitator in the sluice box will be operated. The force of the pump is broken as the contents are discharged against the battering-board 43, and the contents thereafter flow down through the sluice-box by the force of gravity, the heavier particles, including the precious metals, settling to the bottom in front of the riffles, and the lighter particles passing over the riffles with the water, and the constant agitation aiding in sending the lighter particles along. In order to accommodate the pump and sluice-box to any location, the pivotal attachment, shown in Fig. 8 is provided.

It is now clear that we have not only an efficient placer mining machine, but also one which may be easily packed and transported, either for long or for short distances, and by any means of transportation available. Preferably, the entire machine, so far as the metal parts are concerned, is made up of wrought iron forged, although the pulleys may well be cast, and the sluice-box bodies may be of galvanized sheet-iron. Preferably the pump should be set in the water when in use so that the water comes up above the packing box 2'. In order to let out the air and to prime the pump when it is to be started, the valve 8 may be opened; it is held normally closed by a small spring and by the suction of the pump when in operation. The hose may be of any suitable length, say twenty-five or thirty feet, so that quite an area may be covered with the pump and sluice-box in one location.

What we claim is

1. The combination of a centrifugal pump having the intake from above, a hose connected therewith, a nozzle having a perforated end and a rod-handle therefor, a number of upright rods built upon the pump, an upper frame secured thereon, rods pivoted thereto and foldable against said frame and supporting a shaft and pulleys, a drive-shaft and pulley for the pump, a bracket for securing the sluice-box thereto, and pulleys concentric with said bracket pivots, a sluice-box made up of sections detachably secured together, an agitating rod extending through the sluice-box and means for operating said rod.

2. The combination of a centrifugal pump, a frame built upon the same, an upright discharge tube leading therefrom and pivotally mounted in the frame, a sluice-box secured to said upright tube, a battering-board in the sluice-box, riffles, and an agitating rod therein, pulleys mounted concentrically with said upright tube for operating the agitating rod, and the pivoted rods and foldable braces therefor with driving shaft and pulleys supported thereon.

3. The combination of a centrifugal pump

having the intake from above, a hose connected therewith, a nozzle having a perforated end and a rod-handle therefor, a number of upright rods built upon the pump, an upper frame secured thereon, a bracket for securing the sluice-box thereto, and pulleys concentric with said bracket pivots, a sluice-box made up of sections detachably secured together, an agitating rod extending through the sluice-box and means for operating said rod.

4. The combination of a centrifugal pump having the intake from above, a hose connected therewith, a number of upright rods built upon the pump, an upper frame secured thereon, a bracket with pivots for securing the sluice-box thereto, and pulleys concentric with said bracket pivots, a sluice-box made up of sections detachably secured together, an agitating rod extending through the sluice-box and means for operating said rod.

5. The combination of a centrifugal pump, a number of rods built upon the pump, an upper frame secured thereon, a bracket for securing a sluice-box thereto and pulleys concentric with said bracket pivots, and a

sluice-box detachably secured to said frame and an agitating rod and means for operating same by said pulley.

6. The combination of a centrifugal pump having the intake from above, a flexible hose connected therewith, an upright frame built upon the pump, suitable power transmission devices mounted in said frame, and a sluice-box detachably secured to said frame and an agitating rod therein.

7. The combination of a centrifugal pump having the intake from above, a flexible hose connected therewith, a number of upright rods built upon the pump and an upper frame secured thereon, suitable power transmission devices mounted in said frame, and a sluice-box pivotally and detachably secured to said frame.

In testimony whereof we have hereunto signed our names in the presence of subscribing witnesses.

JAMES E. PENNICK.
JOHN O. HALE.

Witnesses:

JOSEPH GROLL.
C. J. ROSEN.