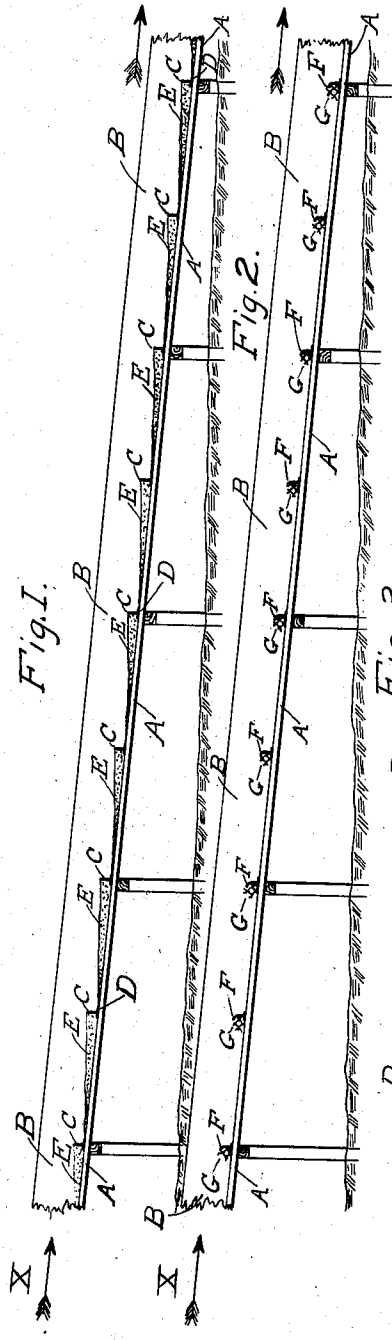
No. 847,519. PATENTED MAR. 19, 1907.

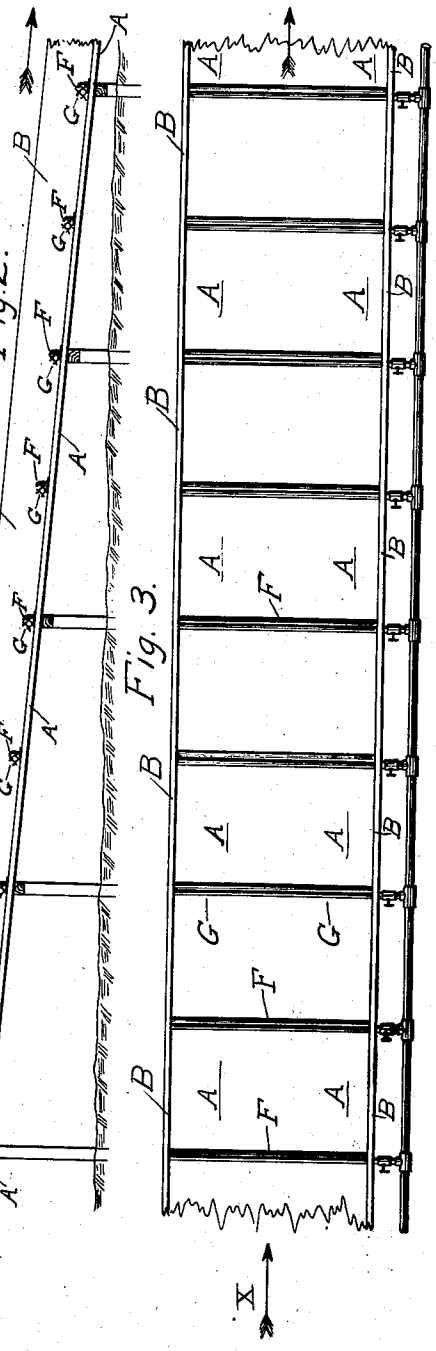
J. B. SLOANE.

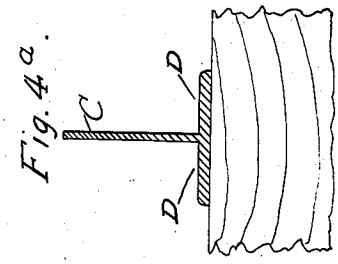
RIFFLE.

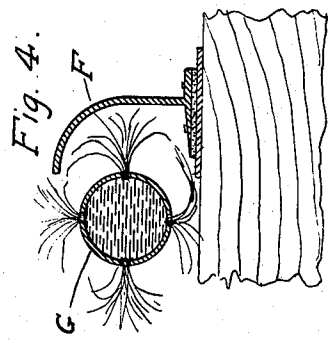
APPLICATION FILED DEC. 17, 1904.

2 SHEETS—SHEET 1.









WITNESSES:

Hadassah Day.

Olive McWain

INVENTOR

John Byron Sloane

BY

St. John Day

ATTORNEY

No. 847,519. PATENTED MAR. 19, 1907.

J. B. SLOANE.

RIFFLE.

APPLICATION FILED DEC. 17, 1904.

2 SHEETS—SHEET 2.

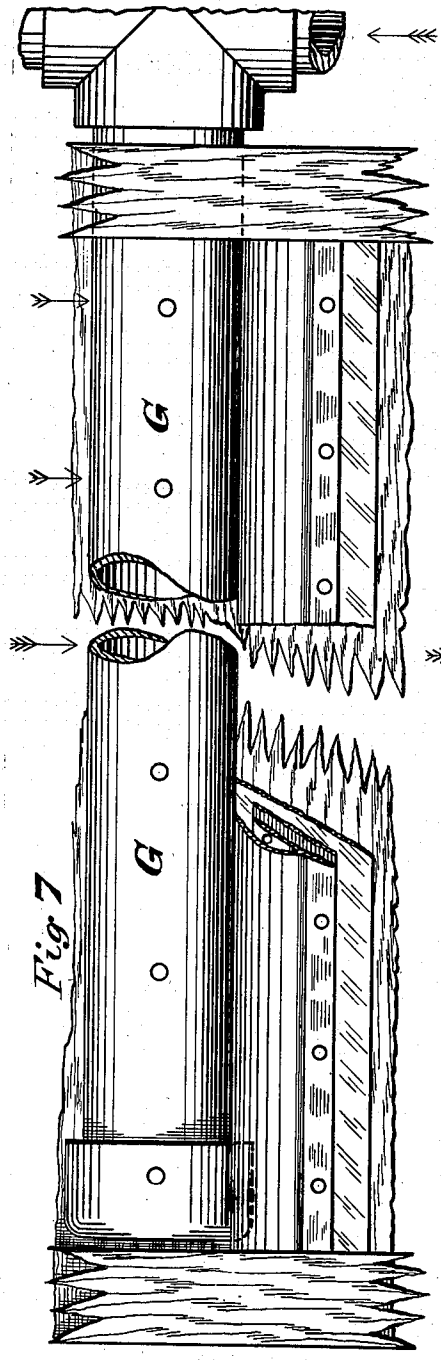


Fig 7

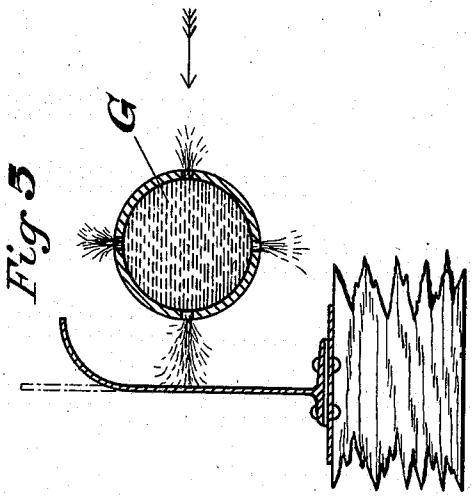


Fig 5

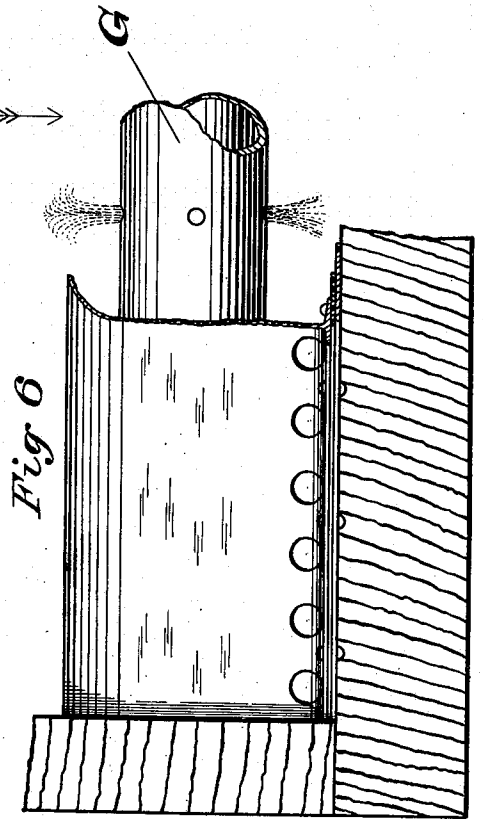


Fig 6

WITNESSES:

Hadassah Day.

Olin G. McBain

INVENTOR

John Byron Sloane.

BY St. John Day.

ATTORNEY

UNITED STATES PATENT OFFICE.

JOHN BYRON SLOANE, OF LOS ANGELES, CALIFORNIA.

RIFFLE.

No. 847,519. Specification of Letters Patent. Patented March 19, 1907.

Application filed December 17, 1904. Serial No. 237,200½.

To all whom it may concern:

Be it known that I, JOHN BYRON SLOANE, of the city of Los Angeles, in the county of Los Angeles, in the State of California, have invented certain new and useful Improvements in Riffles, of which the following is a full, clear, and exact description or specification, reference being had to the annexed drawings and to the letters and figures marked thereon.

My said invention, which relates to certain new and useful improvements in and connected with riffles—such as are used in sluice-boxes, troughs, or other devices or apparatus employed in separating gold or other precious metal from pulverized ore, sand, tailings, or dirt—has for its object to insure that the pulverized ore, sand, tailings, or dirt shall not bank up before the riffles, as is the case when using riffles of the kind hitherto adopted in practice.

Under my present invention the riffles in place of being vertical or straight throughout their height have the front upper portion thereof curved forward. At a short distance in front of and at a short distance above the bottom of the sluice, trough, or other apparatus in which my improved riffles are used there is arranged parallel therewith a water-carrying pipe to which water is supplied from any convenient head or source. This pipe is perforated and when in operation for the purpose of separating the gold or other precious metal water issues from the perforations and prevents the pulverized ore, sand, tailings, or dirt containing the precious metal from banking up in front of the riffles. This agitating effect of the water issuing from the perforated pipes not only prevents the banking of the material passing through the sluice-box or other apparatus, but it also admits of the precious metal being collected by reason of its weight at the bottom of the front of the riffles, while the lighter rock and earthy parts of the ore, sand, tailings, or dirt are carried over the top of the riffles into the next division of the sluice-box or trough or other apparatus and thence from riffle to riffle throughout the length of the sluice-box, trough, or other apparatus. By preventing the banking of the pulverized ore, sand, tailings, or dirt in front of the riffles by the action of water issuing through the perforations of the water-pipe in front of each riffle the fresh pulverized ore, sand, tailings, or dirt arriving into the sluice-box, trough, or its equivalent is operated upon at once by the water issuing from the perforated pipe before each riffle, so that in place of being to a large extent carried over upon the bank of material in front of each riffle of the kind hitherto used the pulverized ore, sand, tailings, or dirt are completely separated from the precious metal contained in them at each riffle, so that the gold or other precious metal is collected at the front of the bottom of each riffle, while the pulverized ore, sand, tailings, and earthy matter is carried over the top of the riffle and without the formation of any banking of the material, as has hitherto been the case. The result of operating my new or improved riffle and perforated water-pipe is that the gold or other precious metal is at once separated therefrom and prevented from being carried in any considerable quantity over the top of the riffle, so that the time occupied in separating the precious metal is thereby considerably reduced.

Upon the annexed sheet of drawings, Figure 1 is a longitudinal section, on a small scale, of a portion of a sluice-box as at present constructed, showing the upright riffles therein and their effect in causing the banking up of the pulverized rock, sand, tailings, or dirt in the spaces between the riffles, it being here explained that the object of showing this figure of drawing is to illustrate the banking of the precious-metal-bearing material, which banking it is the object of my present invention to prevent. Fig. 2 is another longitudinal section, upon a small scale, of a sluice-box, showing my improved riffles and the water-pipe used in front of each said riffle. Fig. 3 is a plan of Fig. 2. Fig. 4 is a transverse section (full size) of a small riffle and the perforated water-pipe on an enlarged scale. Fig. 4ª is a vertical section of a riffle as commonly employed in sluice-boxes and other devices herein shown for the purpose of better illustrating that which constitutes my present invention. Fig. 5 is a transverse section (full size) of a higher riffle and larger water-pipe than that shown at Fig. 4. Fig. 6 is a section of part of one side and part of the bottom of a sluice-box, (full size,) showing the riffle illustrated at Fig. 5 applied therein, also showing the perforated water-pipe in front of said riffle. In the bottom of the riffle shown at Fig. 6 of the drawings, perforations are shown in solid lines, which allow of the passage of any coarse portions of matter. Fig. 7 is a plan (full size) of a portion of a

sluice-box and of my new or improved riffle and perforated pipe shown therein.

With reference to Fig. 1, the bottom of the sluice-box is marked A and the sides B. The riffles C therein each have a flange-bottom D, as shown (full size) at Fig. 4ª. By nails, screws, or equivalent fastenings passing through holes in the bottom D the several riffles C are fastened to the bottom and sides of the sluice-box A. The upwardly-projecting member of each riffle C is vertical, as shown at Fig. 1 and also shown (full size) at Fig. 4ª. On referring to Fig. 1 it will be observed that above—that is to say, in front of—each upright riffle C a bank E of the pulverized ore, sand, tailings, or dirt collects and that these banks E E extend rearward from the front of any one riffle C toward the riffle C preceding it. These banks of pulverized matter remain unmoved, because of the support which the vertical riffles C provide for on the bottom of the sluice-box or trough A, and when formed constitute a series of bridging surfaces across the sluice-box or trough A, upon which the other material subsequently passing through the sluice-box in the direction of the arrow X skims over without more than a little of the gold or other precious metal being separated. This defect I overcome by my improved riffles F. (Shown in the sluice-box at Figs. 2 and 3 and in the enlarged Figs. 4, 5, 6, and 7.)

My improved riffle instead of having its central member upright, as shown at Figs. 1 and 4ª and at dotted lines at Fig. 5, is curved rearward at the upper part thereof, as shown at Figs. 2, 4, and 5, and in front of the said riffle the perforated water-pipe G is situated.

It will be noticed from Figs. 4 and 5 that the water issuing from the perforations in the pipe G acts continually upon the pulverized ore, sand, tailings, earthy matter, or dirt descending, as shown by the arrows X X, Figs. 1 and 2, down through the sluce-box or equivalent apparatus, thereby disintegrating said material in its descent through the sluice-box and preventing its banking against the riffle in the manner shown at E E, Fig. 1. By the action of the water issuing through the perforations of the pipes G not only is the said banking prevented by reason of the quantity of water thus supplied to agitate the pulverized material in front of the riffle, but the gold or other precious metal is readily separated from the earthy or pulverized rock matter and collected at the bottom in the front of each riffle, so that the rate of separating and the quantity of gold or other precious metal thus separated is rapidly increased in a sluice-box or equivalent apparatus provided with the new or improved riffle constituting my present invention.

Although I have hereinbefore described and on the annexed drawings have shown the riffle as having a curved upper portion, it is to be understood that my invention includes the combination of the perforated water-pipe with a riffle which is without the curved portion of the upwardly-projecting member thereof.

Having now described the nature of my said invention and the best system, mode, or manner with which I am at present acquainted for carrying the same into practical effect, I desire to observe, in conclusion, that what I consider to be novel and original, and therefore claim as the invention to be secured to me by Letters Patent, is as follows:

The combination of the sluice, riffles therein having vertical members, flat-bottomed members, curved top members, said riffles being provided with perforations near the junction of the vertical and bottom members, also pipes in said sluice below the plane of the top of said riffles, said pipes having a series of perforations circumferentially spaced to project jets of water in opposite, that is to say, substantially vertical and horizontal directions.

In testimony whereof I, the said JOHN BYRON SLOANE, have hereunto set my hand and seal in the presence of two subscribing witnesses.

JOHN BYRON SLOANE. [L. S.]

Witnesses:
ST. JOHN DAY,
HADASSAH DAY.