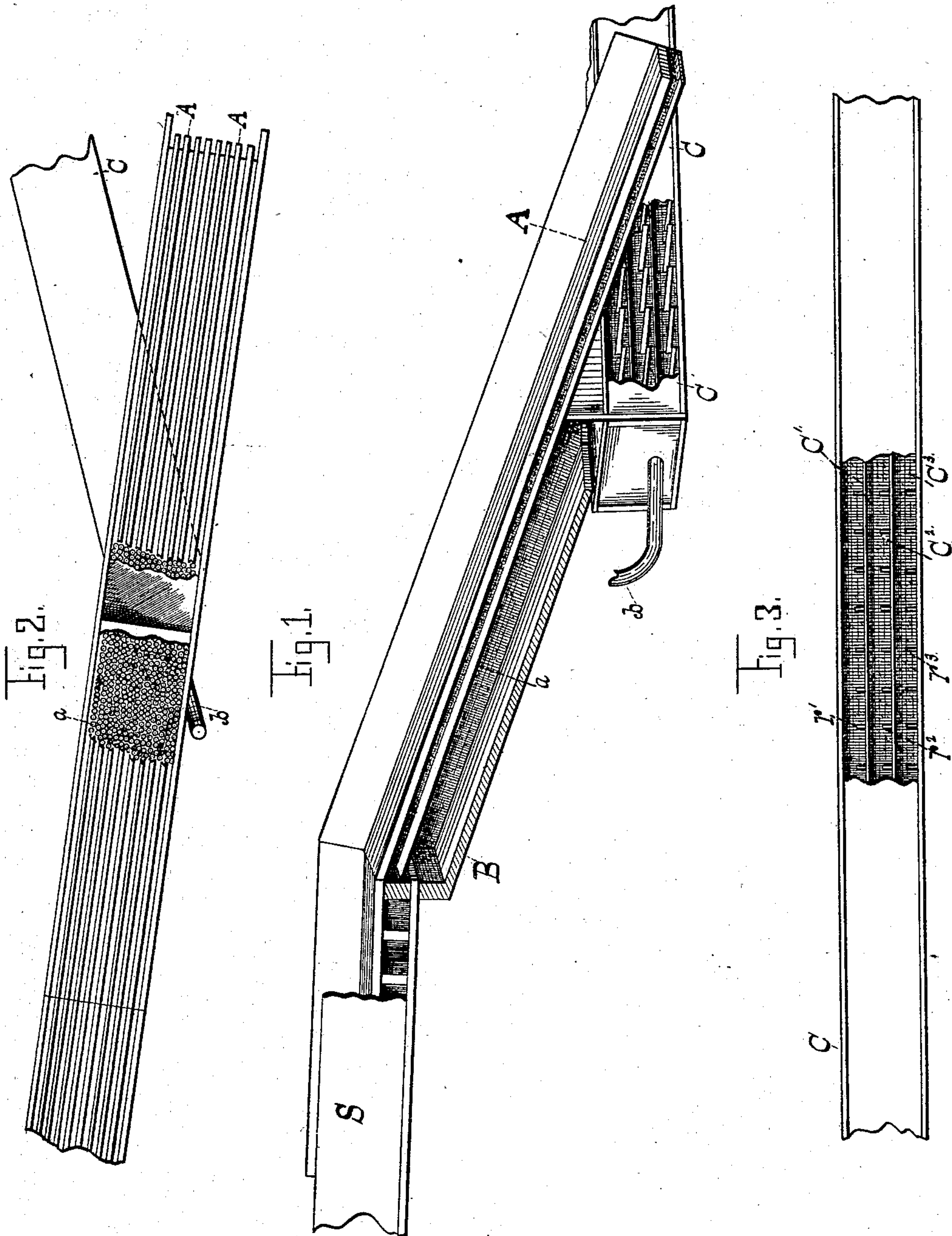


(No Model.)

W. B. FARWELL.
Combined Ore Flume and Riffle Box.

No. 235,944.

Patented Dec. 28, 1880.



Witnesses.

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UNITED STATES PATENT OFFICE.

WILLARD B. FARWELL, OF NEW YORK, N. Y., ASSIGNOR TO STEPHEN G. CLARKE, OF TENAFLY, N. J.

COMBINED ORE-FLUME AND RIFFLE-BOX.

SPECIFICATION forming part of Letters Patent No. 235,944, dated December 28, 1880.

Application filed June 18, 1880. (No model.)

To all whom it may concern:

Be it known that I, WILLARD B. FARWELL, of the city, county, and State of New York, have invented a new and useful Improvement in Hydraulic Mining Apparatus, of which the following is a specification.

My invention relates, in the first place, to the combination of a grille or grating with the ordinary hydraulic or other sluice or riffle boxes used in "placer" mining in such a manner that in one continuous operation the larger boulders, stones, and other coarse material ordinarily carried down and through such sluice or riffle boxes are separated and thrown off, and the water carrying the sand, gravel, and other fine material, with the fine gold, commonly lost in the present method of washing for gold, is conducted into other riffle-boxes or a continuation of the same, and such fine material is there subjected to further washing in the presence of quicksilver.

My invention relates, in the second place, to an improved method of constructing riffle-boxes for such sluices, whereby the fine gold intermingled with the water bearing sand, gravel, and other matter is brought directly into contact with quicksilver, whether it be borne along the bottom, in the middle, or in the upper part of the water-current, thereby rendering it practically impossible for fine float-gold to escape amalgamation and detention, and preventing it from being washed away and lost, as is the case in the ordinary process, where gravitation is wholly relied upon for bringing the gold into contact with quicksilver at the bottom of the riffle or sluice box.

My invention covers the application of each and all of such appliances to washing for gold, whether the riffle-boxes so connected with ordinary mining-slucies be placed at an upward inclination or in a horizontal position, and so requiring a forced jet of water to operate them, as described in my application filed May 11, 1880, or at a continued downward inclination, requiring only the natural flow of water to operate them.

In the accompanying drawings I have shown the attachment of a second riffle-box to an ordinary hydraulic sluice or riffle box with the

former in a horizontal position, illustrating the arrangement of the pipe for the forced jet of water at the rear end of the riffle-box. When the second riffle-box is continued at a downward inclination such forced jet would, of course, not be used.

Figure 1 is a perspective view of the lower end of an ordinary sluice or riffle box with the side removed, showing the arrangement of parallel rails or screens used for separating boulders and stones, a descending platform leading down underneath, and the riffle-box attachment connected therewith. Fig. 2 is a top or plan view of the same with the middle section of the grille or rails broken away, and showing a part of the lower perforated screen and trap into which the water, sand, gravel, and other material fall from the inclined platform. Fig. 3 is a longitudinal view of my new riffle-box with a section of the side removed, showing the arrangement of the series of riffle platforms or boxes arranged one above the other, upon which is placed quicksilver for amalgamating purposes in the ordinary manner.

A A are rails, of any suitable material, arranged parallel to each other in the line of the floor of the sluice-box S, and separated from each other by any desired space.

B is an inclined apron or platform for conducting the matter passing between the rails into the sluice-box C. The box C is arranged at an angle with the box S, as shown in. Fig. 2, for the purpose of projecting the boulders and large stones arrested by the rails over the side of the second box.

b is a pipe conveying a jet of water into the rear end of the second sluice-box, for the purpose of forcing through it the matter delivered from the sluice S when the second box is horizontal or inclined upward.

The two boxes may be placed at any desired horizontal or vertical angle with each other, or may be continued with their courses parallel to each other, although I prefer to arrange them so as to diverge horizontally.

C', C², and C³, Fig. 3, are floors arranged one above the other in the sluice-box C, and each provided with riffles r' r² r³, and mercury placed behind them in the usual manner. There are

open longitudinal passages between the floors and over the riffles, through which the water, with its sand, gravel, and other fine matter, is free to pass. The number of such floors and the distance between them may be varied according to circumstances.

The operation of the apparatus is as follows. The mass of water, bowlders, stones, gravel, and other matter flowing down and out of an ordinary sluice or riffle box falls down upon the inclined rails A A, upon which the bowlders and larger stones are supported and projected out of the sluice, while the water, sand, gravel, and other fine material run through the interstices between the rails and fall upon the inclined platform B beneath, running down into the lower riffle-box, C. If found desirable, one or more perforated screens, as *a a*, (best shown in Fig. 2,) may be placed between the rails A A and the platform B, by means of which the gravel and other material falling into the riffle-box C may be reduced still finer than would result from passing between the rails A A alone. The larger bowlders and stones run down upon the rails A A as upon a chute, and are discharged at the end upon the dump. The water, gravel, and other fine matter passing into the riffle-box C are carried through the same by the power of the forced jet of water from the pipe *b* if the riffle-box lies in a horizontal position or is inclined upward, or if it is inclined downward the natural flow of the water is all that is required.

The sluice-box C may be constructed in the usual form; but I prefer to make it with two or more floors, as shown in Fig. 3, in order that all parts of the water and the sand and other matter may be more thoroughly brought into contact with the mercury. It will be observed that by this arrangement I bring not

only the lower part of the stream, but also the upper and middle parts, directly into contact with the riffles, and by this means much of the fine float-gold which would be carried through a sluice constructed according to the usual plan is amalgamated and saved. The riffles in this lower riffle-box may be made in sections, so as to be easily removed and cleaned whenever desired. The spaces left between the riffle plates or floors may be made sufficiently wide to permit the free passage of the water, gravel, and other matter; but the closer they can be placed together the more effective they will become for collecting and saving the fine gold, since the gold is thus brought into more direct and frequent contact with the quicksilver between the riffles, and thus the area of amalgamating-surface is not only increased, but made to encounter the whole body of water, sand, gravel, and other matter passing through the riffle-box at all points.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a hydraulic mining or sluicing apparatus, a sluice provided with two or more floors arranged longitudinally, and each provided with transverse riffles holding mercury, each of said riffle-floors having a free longitudinal passage-way above it, substantially as described.

2. The combination, in a hydraulic mining apparatus, of the sluice S, the rails or grille A A, and the sluice C, provided with two or more riffle-floors, C' C² C³, substantially as described.

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Witnesses:

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