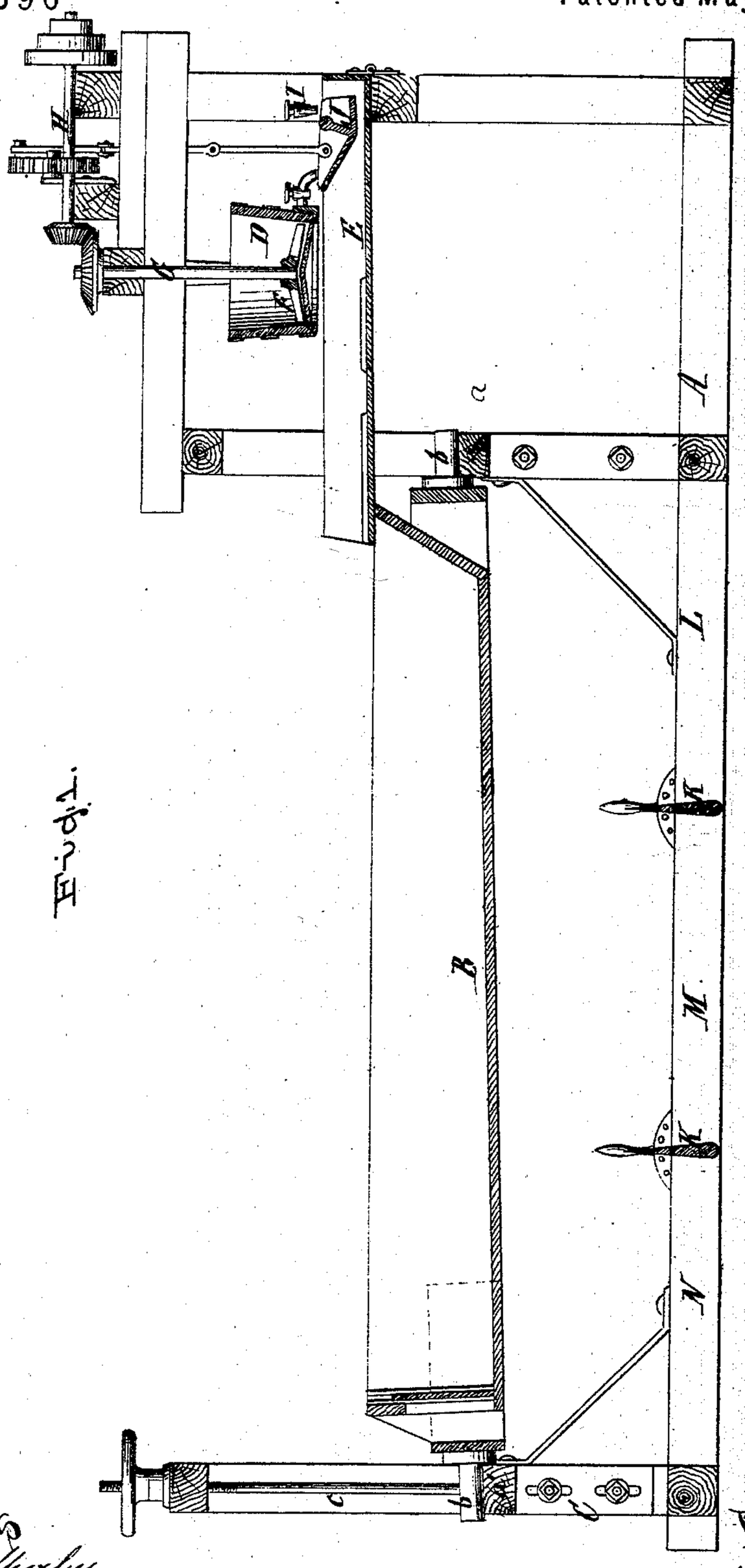
3 Sheets--Sheet 1.

W. HOOPER.

Ore-Washers.

No. 139,390 Patented May 27, 1873.



Witnesses
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3 Sheets- Sheet 2.

W. HOOPER.
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No. 139,390. Patented May 27, 1873.

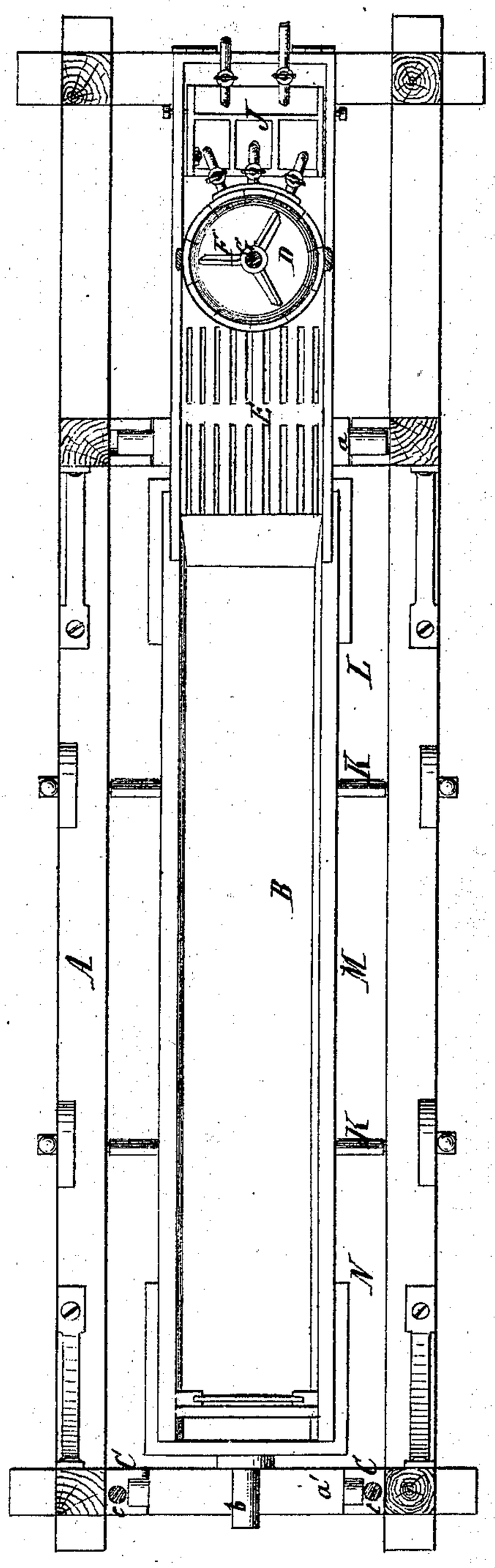

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Fig: 3.

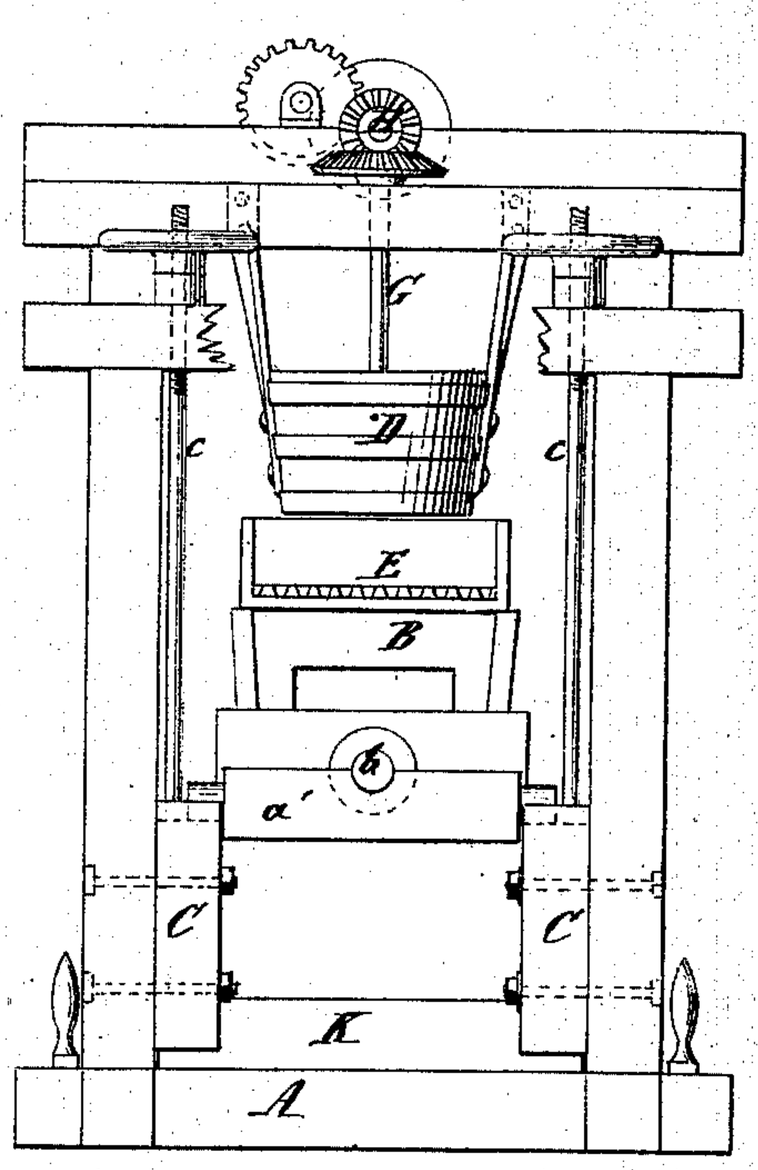
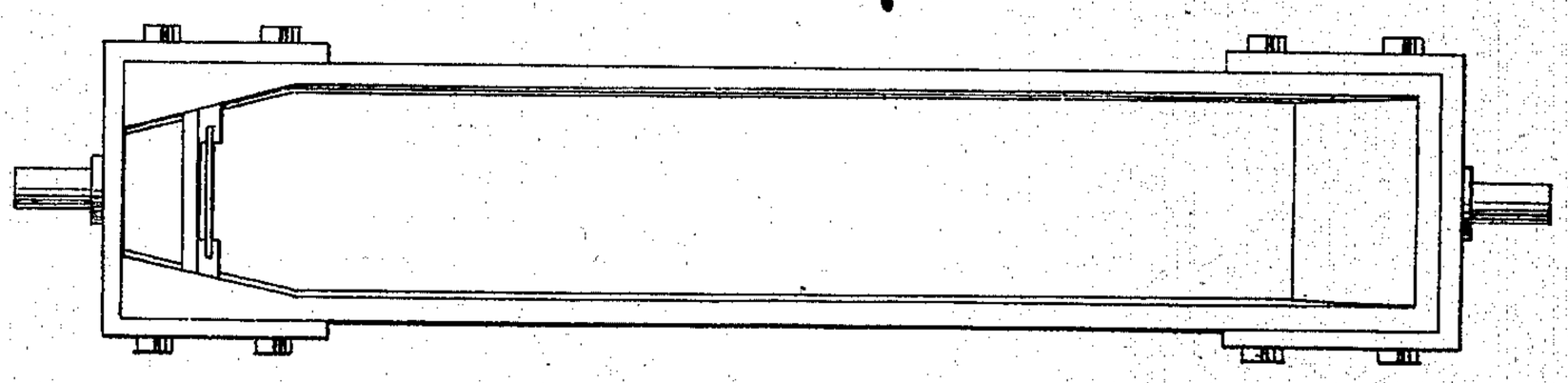


Fig: 4.



Witnesses.

Joseph Arthur

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UNITED STATES PATENT OFFICE.

WILLIAM HOOPER, OF TICONDEROGA, NEW YORK.

IMPROVEMENT IN ORE-WASHERS.

Specification forming part of Letters Patent No. **139,390**, dated May 27, 1873; application filed January 21, 1873.

To all whom it may concern:

Be it known that I, WILLIAM HOOPER, of Ticonderoga, in the county of Essex and State of New York, have invented a new and Improved Dumping-Buddle; and I do hereby declare the following to be a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawing forming part of this specification, in which drawing—

Figure 1 represents a longitudinal vertical section of this invention. Fig. 2 is a sectional plan or top view of the same. Fig. 3 is an end view of the same. Fig. 4 shows a modification of the same.

Similar letters indicate corresponding parts.

This invention relates to a buddle which is hung on gudgeons projecting from its ends, so that an oscillating motion can be imparted to it, and that the contents of the buddle can be dumped at any time by turning the buddle on its gudgeons, whereby the tedious labor of emptying the buddle by means of a shovel is avoided. With this dumping-buddle are combined sharp-edged partitions set underneath and made adjustable in such a manner that the contents of the buddle on being dumped can be separated from each other according to their specific gravity, the heavy ore being lodged on the buddle at or near its head, the middlings in the middle, and the tailings at or near the tail end; or if the tailings are allowed to pass off at the discharge of the buddle the heavy ore will lodge on the upper part and the middlings on the lower part of the buddle. The bearing of the tail end of the buddle is made so that it can be raised or lowered for the purpose of adapting the inclination of the buddle to different kinds of ore. With the dumping-buddle is combined a mixing-tub, which receives the ore from the stampers and delivers it to one compartment of an oscillating feeder, the other compartment of which is supplied with clear water, and by motion of said feeder the water and ore are delivered simultaneously to an apron provided with a series of ridges, so that by the action of said apron the water and ore will be evenly distributed over the separator.

In the drawing, the letter A designates a frame made of wood, or of any other suitable material, and provided with cross-bars *a a'*, which form the bearings for the gudgeons *b* of the buddle B. These gudgeons project from the opposite ends of the buddle so that, if desired, an oscillating motion can be imparted to the buddle, or that the buddle can be swung clear round for the purpose of dumping its contents.

The cross-bars *a a'* are situated at different levels, so that the buddle inclines from its head downward, and the cross-bar *a'*, which supports the gudgeon at the tail end of the buddle, is secured to slides C, (see Figs. 1 and 3,) which can be raised or lowered by means of screws *c*, for the purpose of adjusting the inclination of the buddle.

The ore to be separated is delivered to the buddle, either directly from the stampers or from any separating-machine in which said ore may have already been subjected to a preliminary treatment, through a mixing-tub, D, and apron E.

The mixing-tub is provided with a convex bottom, on which sweeps an agitator, F, mounted on a vertical shaft, G, to which motion is imparted by suitable gear-wheels connecting it with the driving-shaft H, (best seen in Fig. 1.) From the mixing-tub the ore and water are either delivered directly to the apron E, and in this case clean water may be allowed to flow on the apron at suitable intervals through a pipe, I, or the ore and water from the mixing-tub may be conducted in one compartment of an oscillating feeder, J, the other compartment of which is supplied with clean water through the pipe I, as shown in Fig. 1. This feeder is hung on a rock-shaft, and it receives an oscillating motion by a suitable connection with the driving-shaft.

The apron E extends over the head of the buddle, and it is provided with a series of ridges which serve to distribute the ore and water evenly on the buddle. Said apron is hinged at the top, so that its bottom end can be raised to allow the buddle to swing round on its gudgeons.

On the floor below the buddle are secured one or more partitions, K, which serve as cut-offs to separate the contents of the buddle, when being dumped, according to their specific

gravity. The top edges of these cut-offs are sharp, and from their bottom edges extend gudgeons which have their bearings in the longitudinal timber of the frame A. One of the gudgeons of each cut-off can be turned so as to bring its top edge close to or further from the head of the buddle; or, if desired, said cut-off may be made adjustable toward and from the head of the buddle in any other desirable manner.

The ore to be treated on this buddle is crushed or stamped and then mixed with water and conveyed into the mixing-tub, and thence, through a suitable pipe or pipes, into the front compartment of the oscillating feeder, and in the mean time clean water is conducted into the other compartment of said feeder, and by the oscillating motion of the feeder the ore and water splashed out upon the apron which conveys it on the buddle, the ore being evenly distributed by the combined action of the feeder and of the apron. Clean water is let on at intervals, for the purpose of producing clean ore, at the head of the buddle, ready for the market, or for further treatment.

The ore and water alone direct from the mixing-tub, when treated on my buddle, will produce a better separation than an ordinary circular buddle, even without the occasional supply of clean water. A portion of the tailings will pass off while the machine is working, and a portion will remain in the buddle until the same is filled ready to be dumped. Before the buddle is dumped the man in charge will examine the contents and place two pieces of thin iron edgewise on the surface of ore, when the same is to be divided, and the cut-offs K are adjusted accordingly, so that, when the contents of the buddle are dumped, the pure ore is received in the compartment L, the middlings in the compartment M, and the tailings in the compartment N; or, if desired, the machine can be so managed as to let only two grates, viz., pure ore and middlings remain in the buddle to be dumped.

If desired, a rocking or side motion may be imparted to the buddle by means of an eccentric or cam, or by any other suitable mechanism, but in most cases the side motion can be dispensed with.

If desired several buddles can be used in succession, the ore discharging from the first buddle being received by the second, and so on; and, in this case, only one mixing-tub is required.

By arranging the buddle so that its contents can be dumped, the labor of cleaning the buddle by means of a shovel is avoided and much time is saved.

If the greater portion of middlings and all the tailings be left to run out at the tail of the buddle, the outlet at the tail of the machine is contracted, as shown in Fig. 4 of the drawing, and by these means the force of the current of the water at that point is increased, and the space for tail-water and tailings to lodge is diminished.

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

1. A dumping-buddle constructed substantially as herein shown and described.

2. The combination of a mixing-tub, an oscillating feeder and apron with a dumping-buddle, substantially as set forth.

WILLIAM HOOPER.

Witnesses:
JOSEPH ARTHUR,
J. B. RAMSAY.