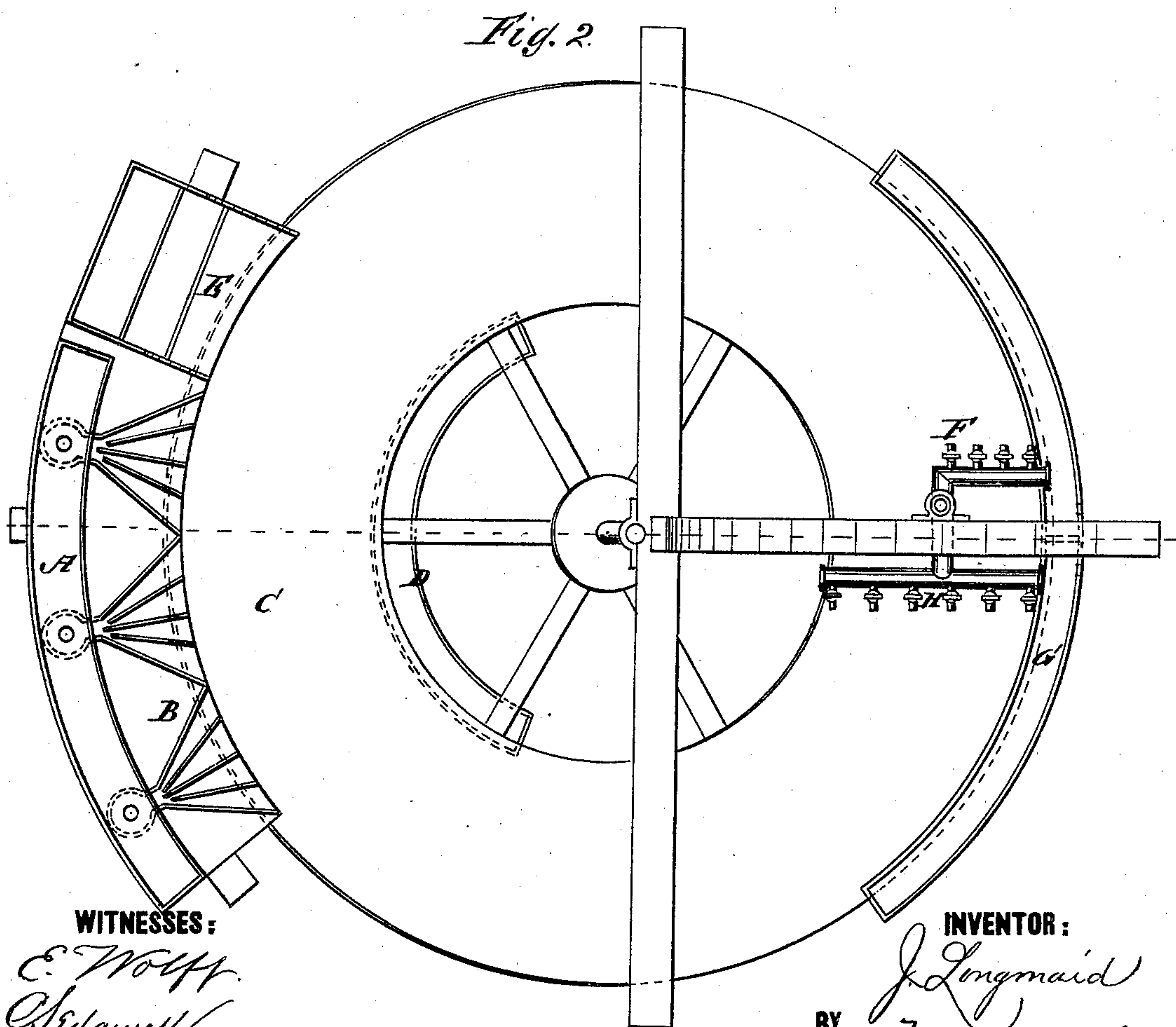
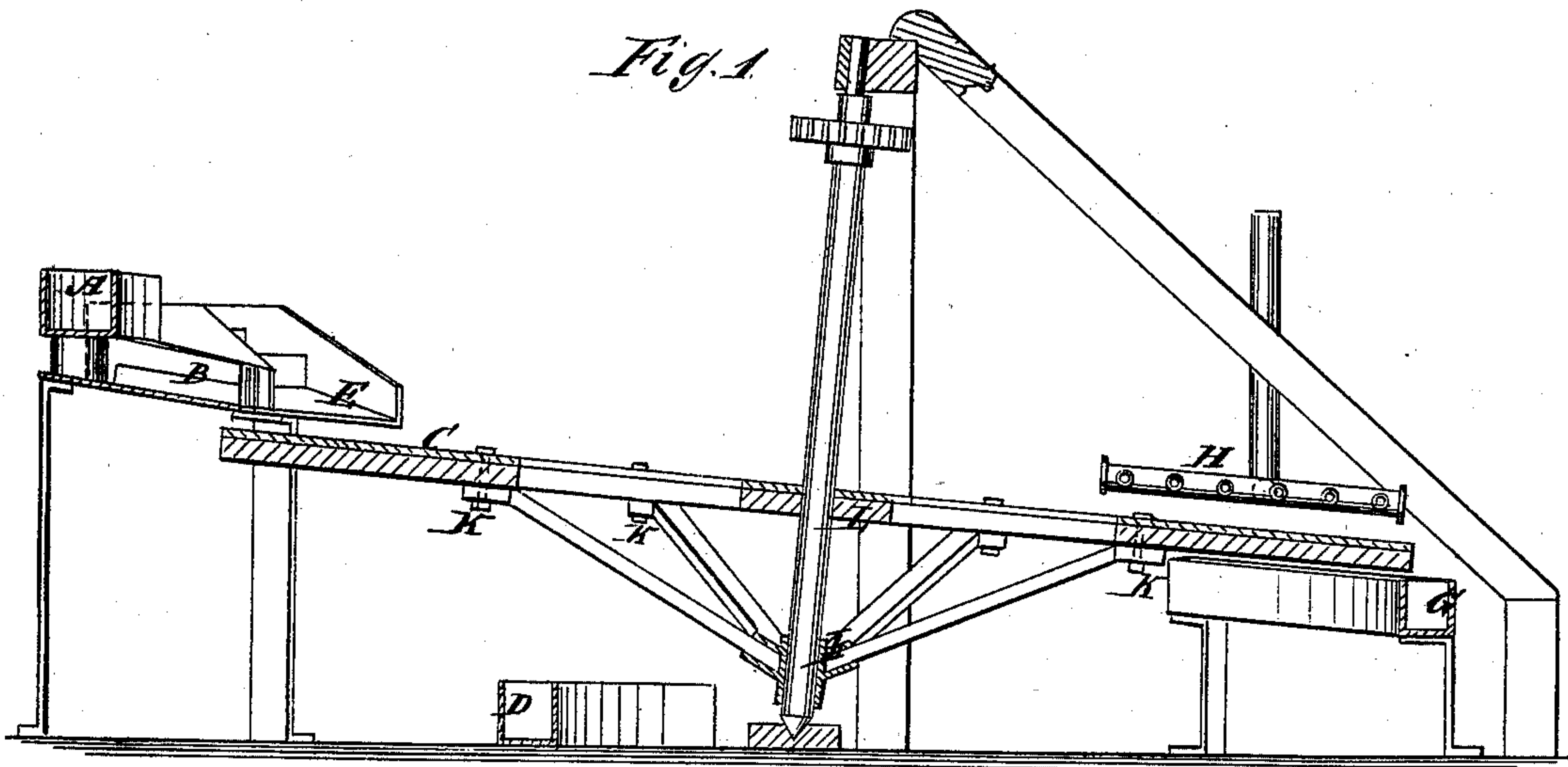


J. LONGMAID.  
ORE CONCENTRATOR.

No. 170,751.

Patented Dec. 7, 1875.



WITNESSES:

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ATTORNEYS.



# UNITED STATES PATENT OFFICE.

JOHN LONGMAID, OF BINGHAM, UTAH TERRITORY.

## IMPROVEMENT IN ORE-CONCENTRATORS.

Specification forming part of Letters Patent No. **170,751**, dated December 7, 1875; application filed July 11, 1874.

*To all whom it may concern:*

Be it known that I, JOHN LONGMAID, of Bingham, in the county of Salt Lake and Territory of Utah, have invented a new and Improved Ore-Concentrator, of which the following is a specification:

The object of this invention is to separate ores of copper, lead, silver, gold, and other metals, either native or in the state of mineral, from stony, earthy, and worthless substances with which they may be mixed or combined, by causing such minerals, in a finely-powdered condition, to flow, by means of water, over a large revolving table, fixed at a certain inclination, and washing the same by means of a thin sheet of water, and finally discharging the washed ore at the lower portion of the table by means of jets of clean water, as hereinafter described, reference being made to the accompanying drawing, in which—

Figure 1 is a transverse sectional elevation, and Fig. 2 is a plan view.

Similar letters of reference indicate corresponding parts.

The water, with the powdered minerals, is run into the box A, and thence flows, by holes in the bottom, over riffles on the apron B, by which means the water carrying the ore is spread evenly over the revolving table C. The heavy particles of ore remain near the outer periphery of the table, while the lighter portions, with the waste, float off into the circular box at D, and can be discharged as waste, or, in case of very rich ore, reworked in the same way.

As the table revolves it receives the ore from the riffles, and passes in front of the box E, from which flows a thin sheet of clean water, that carries off into the box D the remaining portions of waste.

The ore thus washed gradually moves round to the fixed pipes F, fitted with stop-cocks, say four or five, and supplied with clean water sufficient to wash off the dressed ore into the circular box G. The second-class ore is then washed off by the cocks in the pipe H, and runs into the other half of the circular box G. The table continuing to revolve, this part gradually returns under the apron and

riffles B, receives another portion of ore, and passes around, as before described. Thus the operation is carried on continuously, and without the aid of manual labor.

The shaft I of the machine is placed in an inclined position, in order to give the table the necessary slope for the waste to run off. This inclination must be varied according to the nature of the ore or mineral to be operated on. About one inch to the foot will be found generally sufficient.

K are blocks of wood, that may, in practice, be fastened to the arms by means of staples and glands, which can be loosened by turning back the nuts, as a means by which the table may be either raised or lowered by slipping the blocks a little in or out, and then tightening up the nuts again. L L are cast-iron flanges, to which are bolted the arms and stays beneath.

The size of the tables may be varied; but I prefer to make them about twenty-four feet diameter, and the working-rim about six feet wide; but I do not confine myself to any precise dimensions, as these may be varied, or to the exact details of the riffles, sluices, &c.

By reversing the feed and the discharge pipes, the ore may be fed on the inner circle of the table, and the waste discharged on the outer; but I prefer the mode of feeding as previously described.

The table may be worked by cog or friction gear, or otherwise, as may be most convenient.

The most suitable speed, I consider, is about one revolution in from two to four minutes; but this speed may vary with the character of the material operated.

Stiff brushes, either stationary or revolving, will be useful for assisting the separation of some kinds of minerals. These may be placed in front of the feeding-apron or riffles; and when a very large quantity of ore has to be discharged from the table, I will use a scraper of vulcanized rubber, leather, or other suitable material. For some kinds of ore I have also found it useful to cause a small stream of clear water to flow between each set of riffles.

Having thus described my invention, I

claim as new and desire to secure by Letters Patent—

1. The combination of bottom-perforated ore-box A and apron B, having riffles thereon, with an inclined centrally-apertured table, as and for the purpose described.

2. The ore-table C, placed in a single in-

clined plane, and centrally apertured, in combination with waterers E F H, arranged as and for the purpose set forth.

JOHN LONGMAID.

Witnesses:

L. B. KINNEY,

GEO. MULLETT.