T. S. LEWIS.
Ore-Separator.

2 Sheets—Sheet 1.

No. 207,878. Patented Sept. 10, 1878.

Fig 1

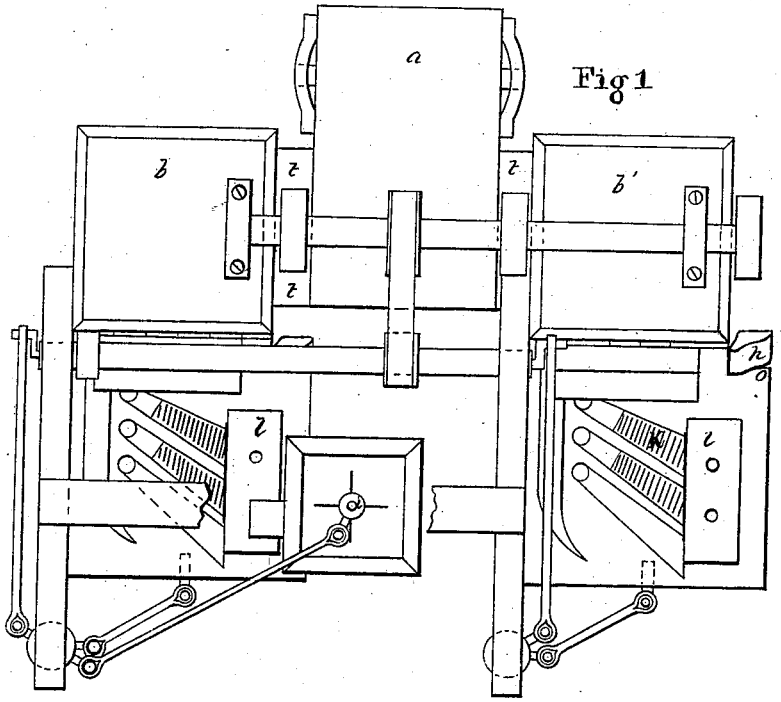
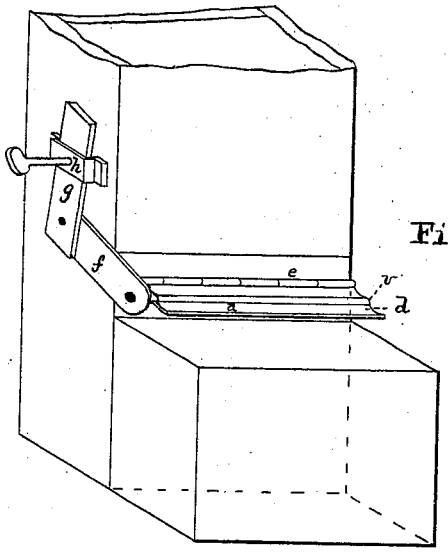


Fig 2



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H. P. Gray

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Tristram S. Lewis;
by George E. Bird
Atty.

2 Sheets—Sheet 2.

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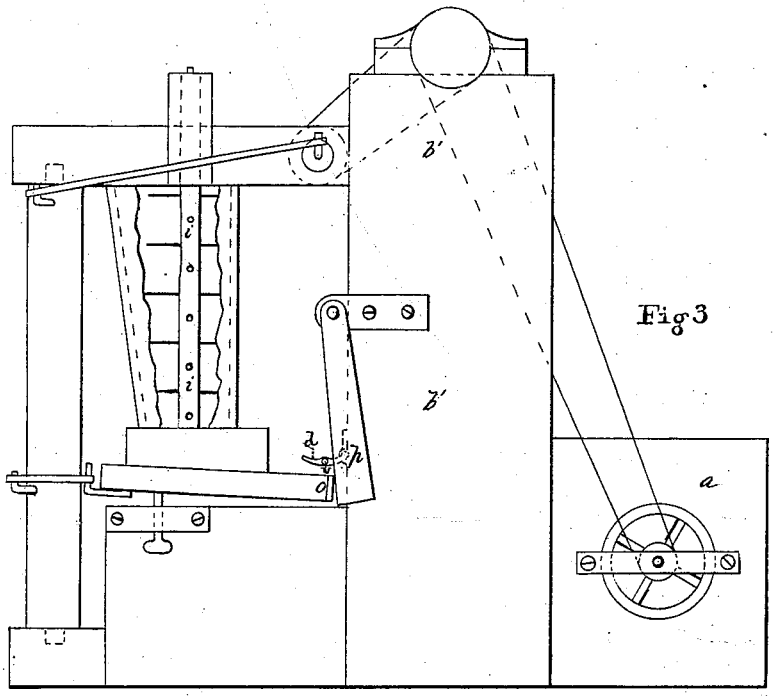
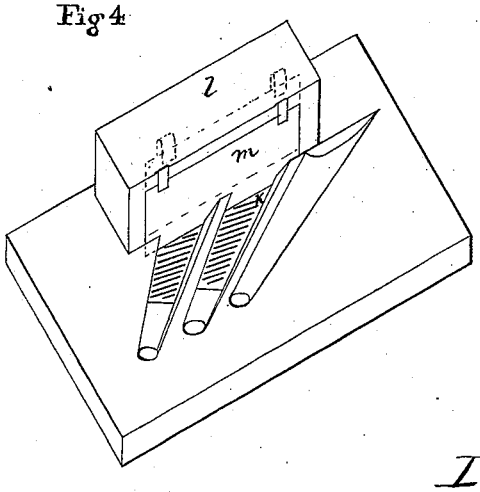


Fig 3

Fig 4



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UNITED STATES PATENT OFFICE.

TRISTRAM S. LEWIS, OF SACO, MAINE.

IMPROVEMENT IN ORE-SEPARATORS.

Specification forming part of Letters Patent No. **207,878**, dated September 10, 1878; application filed March 30, 1878.

To all whom it may concern:

Be it known that I, TRISTRAM S. LEWIS, of Saco, in the county of York and State of Maine, have invented certain new and useful Improvements in Ore-Separators; and I do hereby declare that the following is a full, clear, and exact description of the invention, that will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a top plan. Fig. 2 is a detail, showing the air-valve; Fig. 3, a side elevation; and Fig. 4, a detail, showing the gate.

My invention relates to certain improvements in ore-separators. Letters Patent for an ore-separator have already been allowed me, but not yet issued; and the subject of this invention consists in certain improvements upon the devices therein described and claimed.

These improvements are, first, an improved air-valve; second, an improved rapper; and, third, an improvement in the channel or groove.

The blower *a*, which furnishes the air for the separator, may be placed between two of the air-tanks *b b'*, as in Fig. 1, or at the side of the air-tank at the end of the row of tanks, as *b'*. The mouth of the blower should enter a conduit or pipe, *t*, upon and opening into which are the air-tanks. These tanks should have space between them sufficient to allow the use of the hoppers, and when thus placed any number may be used, provided it be not greater than the blower can supply. Openings from each tank for tables may be made to the number of three or more, one above the other, and upon both the front and back of the air-tanks, if desired.

The improved valve or wind-gage consists of the plate *d*, which is hinged to the air-tank at *e*, just above the opening. For the purpose of stiffening it and of connecting it with the arm *f*, the rod *v* may be used. One end of this rod is fixed to the arm *f*, which is pivoted to the arm *g*. The arm *g* passes under the screw-clamp *h*, where it may be secured in any desired position. By means of this device the volume of the air (and to a certain degree its direction) can be controlled, it being increased or decreased by lowering or raising the arm *g*.

An upright rod, *i*, having teeth or pins projecting at right angles to its length, substantially as shown in Figs. 1 and 2, is placed within the hopper. By proper means an oscillatory movement is given to the rod, substantially as shown in Fig. 1. The purpose of this device is to break up the mass of ore within the hopper and prevent its packing.

My improvement in the grooves or channels consists in providing the upper portion of each channel with slots across the bottom. (See Fig. 4.) These slots should be made as fine as is consistent with their purpose; and with this result in view, it is preferable to replace the wood of that part of the groove or channel with a thin metal plate, *k*.

l represents the receiver, into which the ore drops from the hopper and from which it passes onto the table. The inner side of this receiver, or side nearer the channels, is provided with a sliding feed plate or gate, *m*, the lower end of which, when the plate is down, should project into the channels below the bottom of the receiver. (See Fig. 4.)

The object of these devices is as follows: Certain portions of the ore are ground so fine that the blast would necessarily drive them from the table together with the particles of stone. This loss is, to a great degree, if not quite, obviated by the devices in question. By means of the slide *m* the ore, as it passes down from the receiver, may be retained beneath the receiver, where it is protected from the air, until the heavier and more valuable portions have been shaken down upon the slotted plate. The lower portions are therefore the first to pass out from beneath the receiver, and as the ore passes along the channels the light and finest portion of the ore drop through the slots, while the particles of stone are blown from the surface.

The rapper *p* consists of a heavy long piece of metal, pivoted so that it may swing against the table or platform at *o*, (see Figs. 1 and 3,) which at this point should be provided with a metal plate. In operation, the rapper, being struck by the table as it oscillates, is thrown back to again swing against the table and be again thrown back. The quick and sudden

jar thus given to the table at each oscillation greatly facilitates the passage of the heavier portions of the ore to the bottom of the channel.

I do not claim, broadly, striking a table, platform, or belt for the separation of ores with a hammer; nor do I claim the device shown in Letters Patent of the United States No. 92,893, granted to C. D. Smith, July 20, 1869, wherein the under surface of a moving belt is struck by hammers set in motion by cam-wheels.

What I claim as my invention, and desire to secure by Letters Patent of the United States, is—

1. The hinged plate *d*, in combination with arms *f* and *g* and screw-clamp, substantially as described.

2. A table or platform for the separation of ores, provided with a channel or groove, having at the bottom of its upper portion the slotted plate, substantially as described, for the purposes set forth.

3. In combination with a table for the separation of ores and device for oscillating the same, the loosely-suspended rapper *p*, substantially as shown.

In testimony that I claim the foregoing I have hereunto set my hand this 26th day of March, 1878.

TRISTRAM S. LEWIS.

Witnesses:
GEO. E. BIRD,
WM. M. SARGENT.