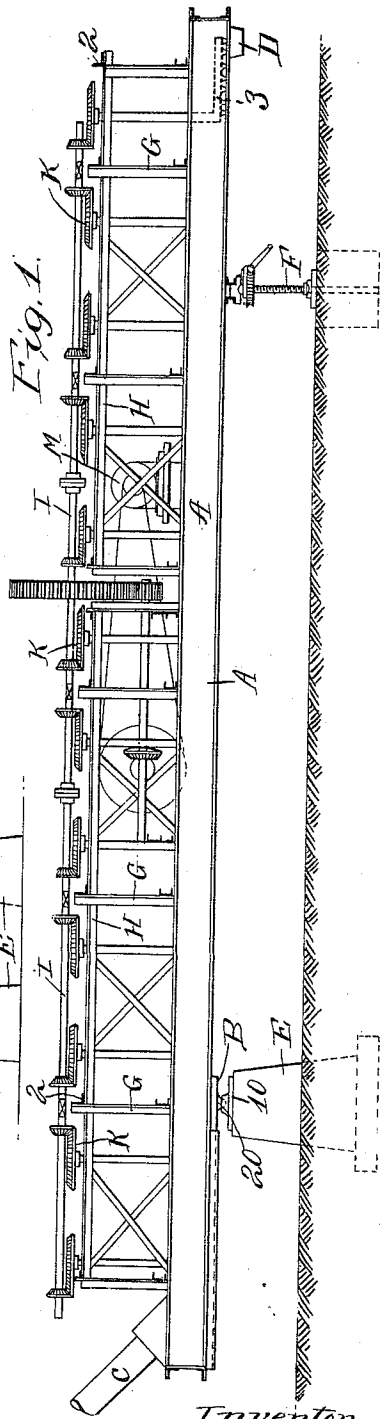
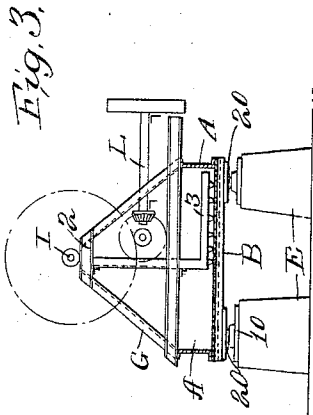
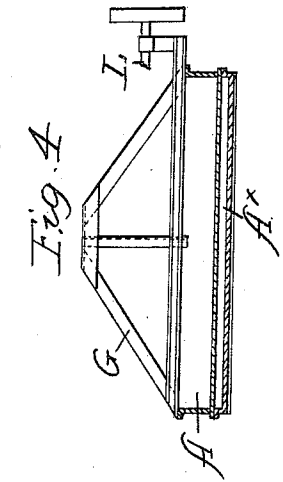
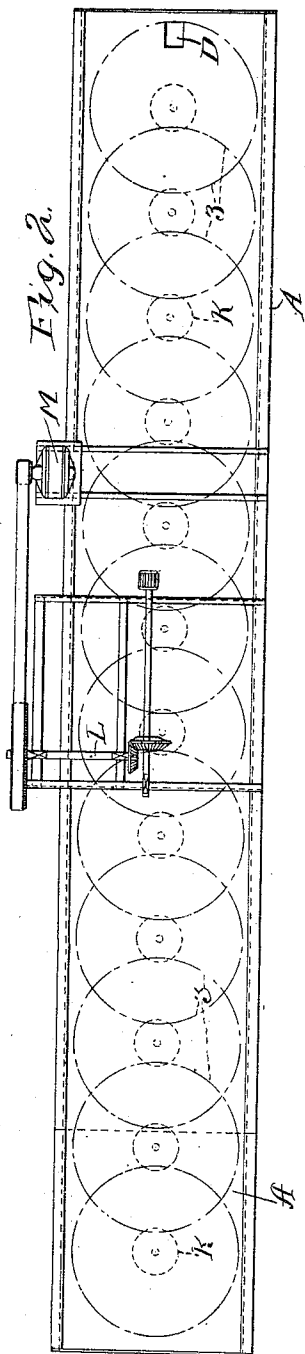


T. EDWARDS.
COOLER FOR ORES.

APPLICATION FILED NOV. 17, 1909. RENEWED NOV. 10, 1910.

995,445.

Patented June 20, 1911.



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UNITED STATES PATENT OFFICE.

THOMAS EDWARDS, OF SEBASTOPOL, VICTORIA, AUSTRALIA.

COOLER FOR ORES.

995,445.

Specification of Letters Patent. Patented June 20, 1911.

Application filed November 17, 1909, Serial No. 528,525. Renewed November 10, 1910. Serial No. 591,675.

To all whom it may concern:

Be it known that I, THOMAS EDWARDS, a subject of the King of Great Britain and Ireland, residing at Sebastopol, Ballarat, Colony of Victoria, Australia, have invented certain new and useful Improvements in Coolers for Ore, of which the following is a specification.

My invention relates broadly to furnaces for roasting ores. Such furnaces require means for cooling the ore, when the roasting process has been completed, and of these means different kinds have been heretofore suggested or used, such as drag chains in which dust is raised, involving consequent loss; or revolving jacketed cylinders, which are troublesome and expensive.

I have discovered that the best form of cooler may, with some modifications, be built on the principles involved in my ore roaster, shown in Letters Patent of the United States, granted on the 25th day of November, 1902, and numbered 714,464, and that this improved form of cooler is especially fitted to operate with my said roaster.

My invention is illustrated in the accompanying drawings, in which—

Figure 1 represents a side elevation, and Fig. 2 a plan showing the rabbling mechanism. Fig. 3 represents a cross section. Fig. 4 is a detail view showing the use of a water jacket for cooling.

In these drawings is shown at A, the body of the cooler, a rectangular structure, of any dimensions desired, according to conditions. The proportions suitable for practical work may be stated as forty (40) feet long, by six (6) feet wide and fifteen (15) inches deep.

The sides are formed by the channel irons A. The structure is stiffened by angle irons B, placed transversely under the bottom, at suitable intervals. The top is open to the atmosphere, as a means for cooling the ore, and I propose also, if the conditions under any circumstances require, to apply a cold water jacket, with the proper circulation, for additional cooling means. Such jacket is shown at A* Fig. 4.

In the cooling process I employ rabbles for stirring the ore and for giving it a traversing movement along the bed of the cooler while permitting exposure of all parts to the air for the escape of heat units. These and the operating mechanism are supported by frame work mounted on the side

girders of the cooler. In this frame work are angle irons G, fixed to the girders and inclined inward and connected by cross pieces 2, and angle iron longitudinal bars H, and to these are bolted the bearings which hold the spindles of the rabbles in place. On the top of these frames are also bearings which support the line shaft I extending longitudinally of the cooler. This is provided with bevel pinions which mesh with crown wheels K on the upper ends of the spindles of the rabbles 3, and the shaft is driven from a preferably variable speed pulley on a short transverse shaft L. This is driven by a motor M mounted on the superstructure. By means of the variable speed pulley, the rabbles may be controlled in the process of cooling.

In order to cause the ore to move from the feed end to the discharge, the cooler is inclined, and this movement is regulated by the amount of inclination, at the will of the operator. To effect this the body of the cooler is provided with a cast iron pivot 20, which rests on a cast iron bearing 10 on the top of a block E. This pivot may be located at any suitable point under the cooler, and toward the discharge end I use a screw and worm gear F whereby the cooler may be tilted more or less.

The feed spout C receives the ore from the spout C' of the roaster, and the cooled ore is discharged from the spout D.

I may cool the rabbles by the means described in my aforesaid patent or use plain rabbles.

The bottom of the cooler may be composed of various materials, such, for instance, as sheet iron, though I do not confine myself to this.

I claim:

1. A cooler for ores and other materials, the same consisting of a tilting body formed of sides and bottom, and open to the air at the top, in combination with the rotating spindles carrying rabbles arranged to revolve in the ore, and mechanism for moving the rabbles.

2. A cooler for ores and the like, the same consisting of a tilting body formed with sides and bottom and an open top and an open superstructure, in combination with vertical spindles supported in the superstructure and carrying rabbles arranged to revolve in the ore, and means for operating the spindles, substantially as described.

3. A cooler for ores and the like consisting of a tilting body formed with closed sides and bottom and an open top, cooling means, an open-work superstructure, vertical
5 spindles and a drive shaft supported thereby, and rabbles carried by the spindles, substantially as described.

In testimony whereof, I affix my signature in presence of two witnesses.

THOMAS EDWARDS.

Witnesses:

JOHN F. JEWELL,
CHARLES HARKETT.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."
