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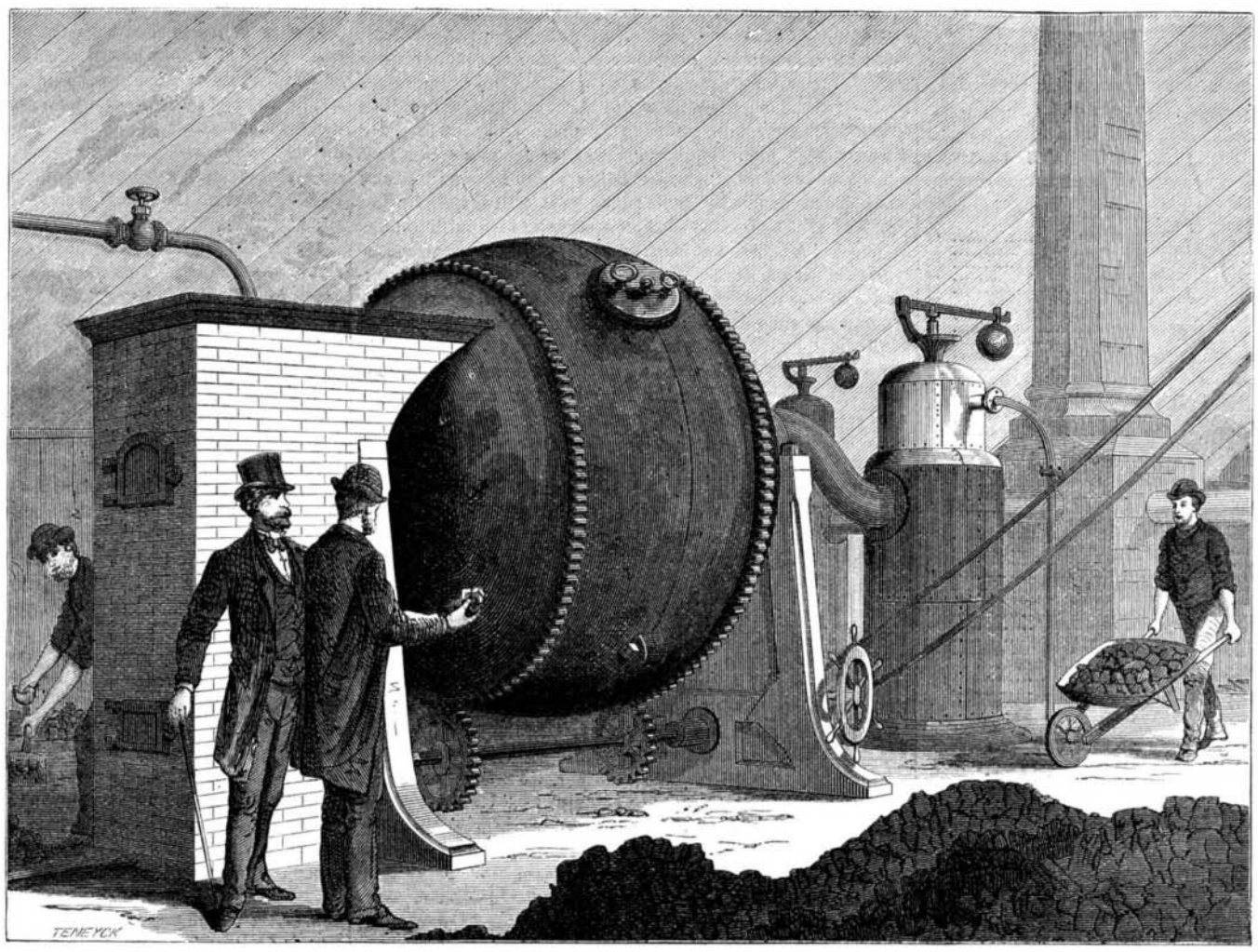
IMPROVED REVOLVING FURNACE.

The roasting of ores, having for its object the removal of all such volatile substances as sulphur, antimony, arsenic, etc., and the rendering of the subsequent smelting and reducing processes more easy, is ordinarily done either in mounds or heaps or in stationary furnaces (reverberatory or otherwise), according to the nature and kind of ore. As a substitute for these various means employed, the invention illustrated in the annexed engraving is intended, and it is constructed so as to perform effectively all the operations of roasting, annealing, smelting, extracting mercury, drying, reducing ores, etc. The three views here given show, first, (Fig. 1) a perspective view of the apparatus; second (Fig. 2), a longitudinal section of the furnace as used for roasting ores, and third (Fig. 3), a transverse section of the invention arranged for smelting purposes. It will be seen also from the engravings that the furnaces are intended to grouped about a central chimney, one opening into each of the four faces of the base of the latter. Referring to Fig. 2, A is a sphere of boiler plate or cast iron, lined with ganister, fire brick, and asbestos, the effect of which lining, we are informed, is to keep the exterior of the sphere cool, even while an extremely high heat is maintained within. This globe is suspended on hollow journals, and on its exterior surface are circular racks, B, which engage with the gear wheel, C, and the latter communicates with the hand wheel, L. By turning this hand wheel the globe is easily rotated. E is the furnace, the blast from which enters the globe, which is previously filled with ore and closed, through the water tweer F, which, as shown, passes through one of the hollow journals. During the operation of roasting, the globe is constantly rotated, so that the ore within is kept in agitation, thus allowing the heat to pass through and act upon every part of its mass. The volatile products make their exit through the opposite journal, G, and entering the condenser, H, are condensed by a fine shower of water entering through the perforated diaphragm, I. In this way such materials are reduced so as to be easily removable; and at the same time, if precious metals be under treatment, such portions of the latter as would otherwise escape are caught and retained. From the condenser, the blast passes, as shown, into the chimney.



MANES' REVOLVING FURNACE.—Fig. 1.

The adaptation of the furnace for smelting purposes is easily understood from Fig. 3. The globe is of course held stationary during the operation; and the blast, entering by water tweers through both journals, passes down through the charge, is reflected up, and exits through the open manhole above. The tweers can be continued downward and entirely around the bottom of the globe, if required. When the process is complete, the globe may be tipped to discharge its contents through the manhole at J, or it may remain stationary and the charge be removed through the vent at K.

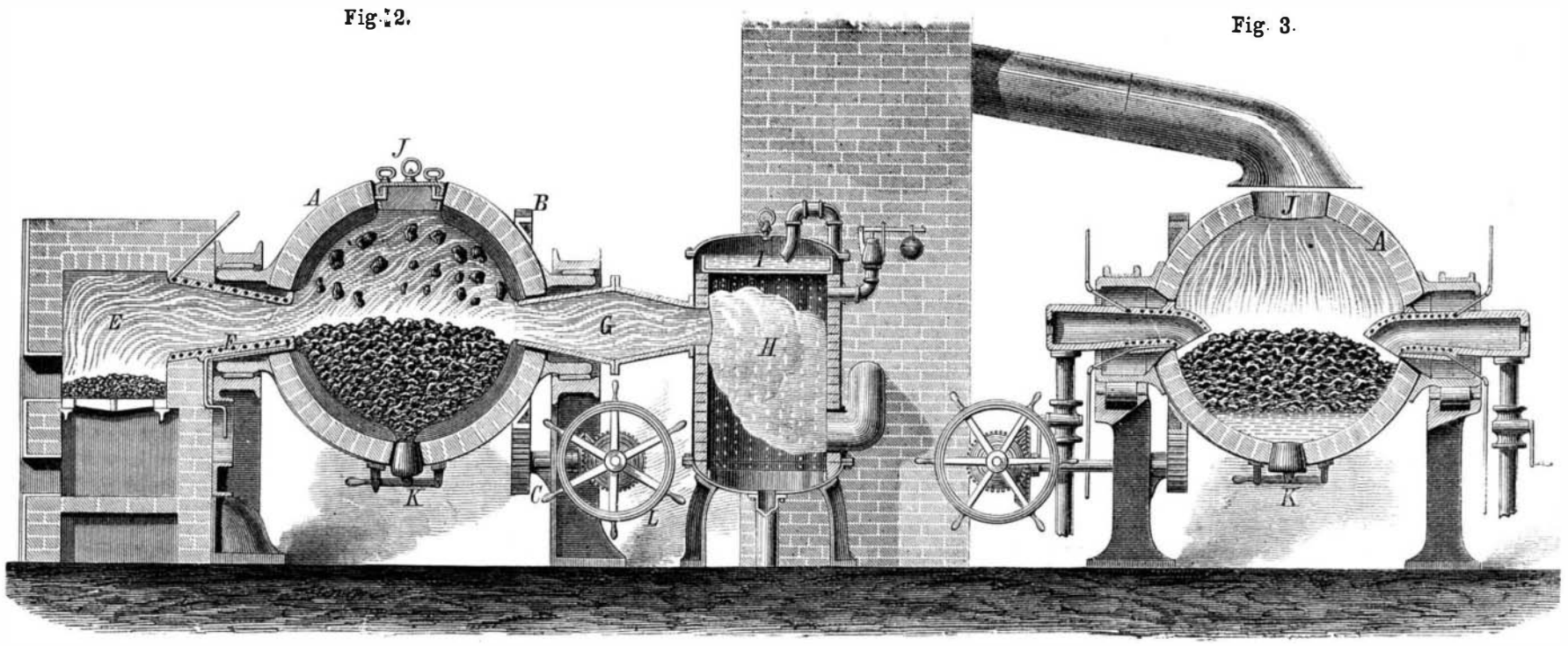
For handling refractory and low grades of gold and silver ores, the inventor claims for the apparatus special advantages, as by its use several tuns can be worked daily, and the labor of but one man to attend the furnace will be required. The globular form adopted is one easy of construction and well suited to sustain its great weight from two points of support. The lining of the interior can, it is claimed, also be rendered more stable than in any other form, while it presents less surface for the radiation of heat. The inventor has also introduced a new and effective process for amalgamating gold and silver ores, which, used in connection with the furnace, adds greatly to the advantages of the latter as a means of extracting the precious metals from their ores. Many of the ores hitherto found most difficult to handle, such as nickel, cobalt, antimony, arsenic, zinc, bismuth, lead, copper, can be safely worked, as no injurious fumes save such as pass through the condensers can escape. Iron and steel can also, as already indicated, be treated and made with important advantages, as the annealing of malleable iron and the use of crucibles in converting or making steel are, by this device, altogether obviated. The first of these furnaces is now, we earn, being constructed at the works of the Hartford, Conn., Machine Company for the new Nickel Smelting and Refining Company of the same city. Four complete furnaces of like pattern are to be erected by the corporation last mentioned.

Patented April 6, 1875. For further information address the inventor, Mr. James Manes, 74 Asylum street, New Haven, Conn.

A GERMAN firm has recently introduced an alloy of 62 parts copper, 18 parts lead, 10 parts tin, and 10 parts zinc. It is called dysiot, and is a kind of whitish brass, readily fusible.

Fig. 2.

Fig. 3.



MANES' REVOLVING FURNACE.---SECTIONAL VIEW.