

IRON ORE WASHING PLANTS

The occurrence in various parts of the United States and Canada of large bodies of iron ore too low in iron content to be smelted direct in the blast furnace at a

The following description of the plant is from a bulletin issued by the Allis-Chalmers Co.:

The plant of the Oliver Company which treats upwards of 1000 tons per hour, is an example of conservative construction, a plant designed for long life

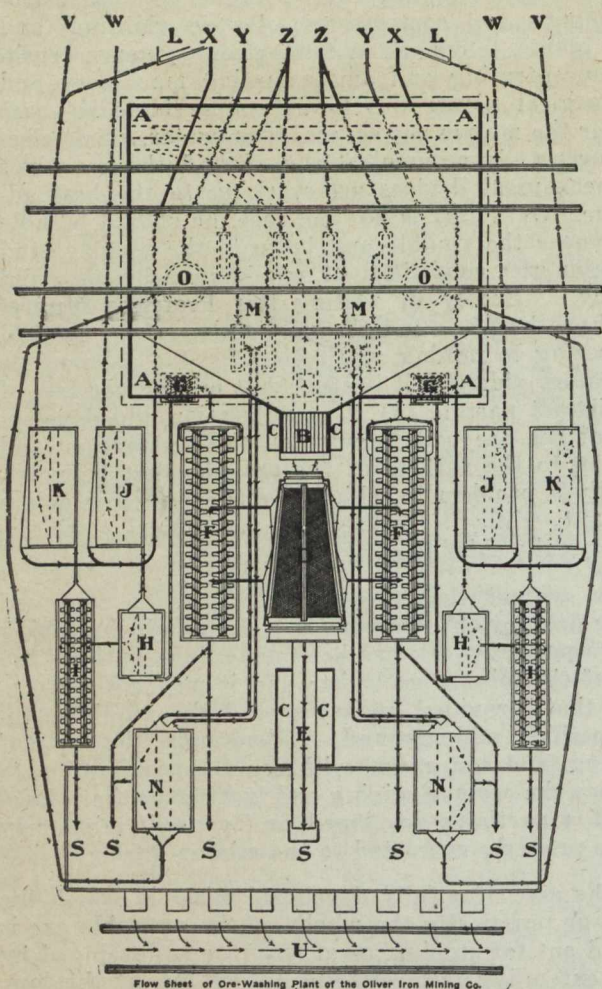


Fig. 1. Flowsheet of Iron Ore Washing Plant.

profit, is of great economic importance to these countries. Undoubtedly from these sources the future supply of this most important commodity will be drawn when the great bodies of high grade ore now furnish-

A—500-ton crude ore receiving bin; B—71 in. grizzly bars; C—Rock pocket; D—20 ft. 2 in. perforated conical screen; E—3 ft. picking belt; F—25 ft. log washer; G—36 in. x 4 ft. perforated chip trommel; H—5 ft. x 8 ft. settling tank; I—18 ft. turbo washer; J—K—6 x 14 ft. settling tank; L—Overstrom tables; M—10 x 54 in. Frenier pumps; N—7 ft. x 12 ft. dewaterer; O—5 ft. x 6 ft. clear water tank; S—Shipping bin; T—Tail race; U—Shipping track; V—To first 5 Overstrom tables; W—To last 5 Overstrom tables; X—Overflow to waste; Y—Wash water; Z—Concentrates lifted by Frenier pumps to dewatering tanks.

ing the bulk of the raw material to the blast furnace are insufficient for the demand.

The interest of the public in the conservation of natural resources and the interest of owners of such low grade ores is stimulated by the success of two milling plants installed on the Mesabi range in Minnesota for raising the grade of hitherto unprofitable ores. These mills are those of the Oliver Iron Mining Company near Coleraine, Minn. on the shore of Trout Lake, and of the Wisconsin Steel Company near Nashwauk, Minn. and a short distance from the shore of O'Brien Lake. The ores treated in both mills consist of a mechanical mixture of soft hematite and sand, with boulders of ore and paint rock and some clay, all loosely held together, and breaking up in handling.

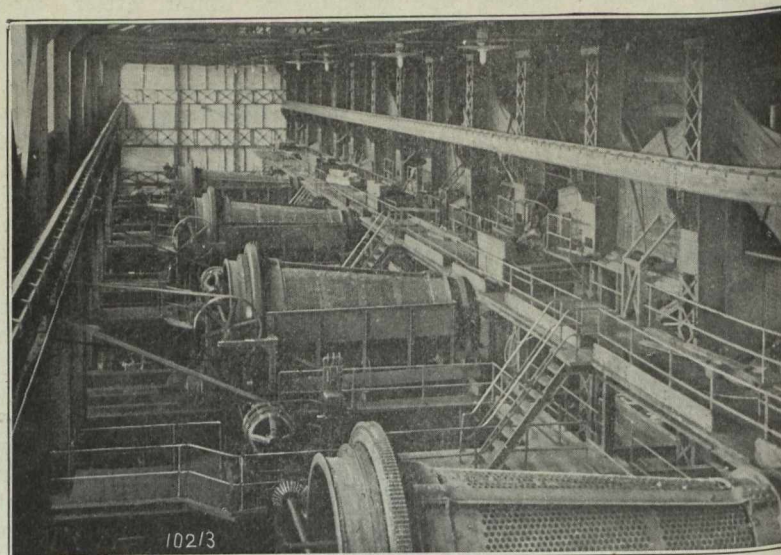
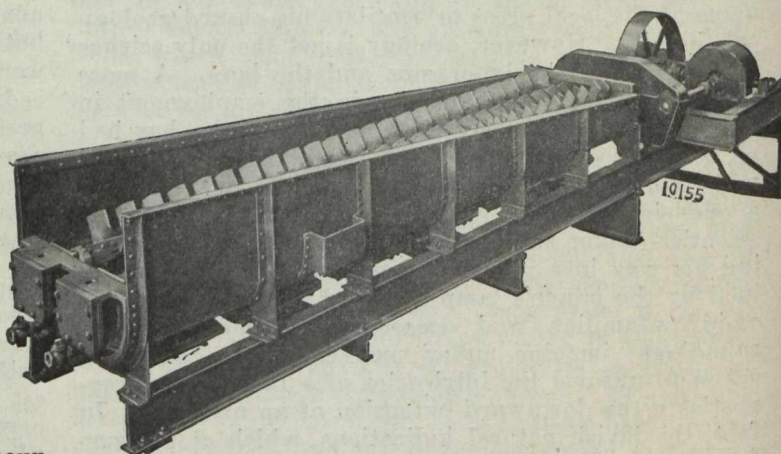


Fig. 2. Trommels, Oliver Plant.



Log Washer

with a consequently low depreciation and maintenance charge, for low operating costs, and for reliability. The accompanying flow-sheet, Fig. 1, shows the passage of the ore through a single unit of the mill, there being five similar units. The ore comes from several of the company's mines in the immediate neighborhood, and is hauled in trains of dump cars and discharged into the five-hundred ton receiving bin, Fig. 3, within the mill building. Leaving the ore bin "A" the ore flows over the grizzly "B", where a partial sorting takes place, waste being rejected into the pockets "C" and coarse ore being broken by hand to pass through the grizzly. The ore with the water used in sluicing it to the grizzly is fed into the revolving conical trommels "D", four feet in diameter at the feed end and tapering to a diameter of eight feet in a total length of twenty feet. These trommels, Fig. 2, are especially designed for iron washing service, very substantial in construction, carried on rollers so that there is an unobstructed opening through the trommel for the passage of the ore. It has few wearing parts and those capable of easy replacement, the screening surface is of perforated metal, which in this case has perforations two inches in diameter. After being washed by a