To all whom it may concern:

Be it known that I, WALTER KENNEDY, a citizen of the United States, residing at Allegheny, in the county of Allegheny and State of Pennsylvania, have invented or discovered certain new and useful Improvements in Charging Apparatus for Blast-Furnaces, of which improvement the following is a specification.

The invention described herein relates to certain improvements in apparatus for charging ore into blast-furnaces.

It is in some places the practice to provide a line of track in a tunnel or below the surface of the ground or floor on which the ore is stored and to provide chutes whereby the ore can be loaded into cars traveling on such line of track. The skipway extends from a point under said line of track to the top of the furnace, so that the ore-cars can be discharged directly into the skips. This apparatus greatly facilitates the charging of the furnace, as the movement of the ore is effected by gravity into the car, skips, and furnace. Considerable delay is experienced in loading the skips, as the cars conveying the ore to the skips are usually of considerable less capacity than the skips, and the latter must be held until two or more cars are brought to position over the skips discharged and then shifted to make room for the next car. When the cars are made of a capacity equal to that of the skips—an arrangement not generally desirable or practicable—either the loaded cars or the empty skips must be frequently held the one for the other.

The invention described herein has for its object the provision of a storage vessel or bin at the point where the skips are loaded or preferably in excess of a capacity equal to or preferably in excess of that of the skip, so that the cars can be unloaded and the skip loaded without any delay, both being operated without regard to the movements of the other.

The invention is hereinafter more fully described and claimed.

In the accompanying drawings, forming a part of this specification, Figure 1 is a plan view showing the arrangement of the tunnel, skipway, storage-bins, &c. Figs. 2 and 3 are sectional elevations on planes indicated, respectively, by lines II II and III III, Fig. 1.

In the practice of my invention one or more lines of track 1 are arranged below the level of the storage floor or ground for the ore, such depressed passage-way being covered, by preference, forming a tunnel 2. Chutes 3, extending into the tunnel and terminating over the lines of track, are arranged at suitable intervals. These chutes are provided with suitable doors 4, having operating-handles 5, so that a quantity of the ore can be placed in the chutes and above the same and discharged into the cars 6 as soon as they are in position under the chutes. One or more vessels or bins 7, dependent upon the number of skips 65 employed, are arranged in such relation to the lines of track 1 that the cars 6 can be discharged thereinto. The skipway or skipways 8 extend under the discharge-openings of these bins, so that the skip 9 can receive its load from the bins or vessels. The discharge of the contents of the bin is controlled by a suitable door 10, which can be operated in any suitable manner, but preferably by a lever 11, arranged in the operator's platform 12 and in convenient proximity to the wheel 13, controlling the movements of the skip.

In operating this plant the ore handlers need not pay any attention to the movements of the skip and will be required only to maintain a sufficient quantity of ore in the bin to charge the skip, so that ample time will be afforded for loading and weighing the cars. On the other hand, the operator controlling the loading and movements of the skip can shift or open the door 10 as soon as the skip reaches position under the bin, so that the skip is out of service only long enough to permit its being filled from the bins.

I claim herein as my invention—

1. A blast-furnace plant having in combination a skipway, a skip movable along such way, a storage-bin arranged above the skipway at the skip-loading point, a line of track extending from the ore pile to a point above the storage-bin, and cars movable along such track, substantially as set forth.

2. A blast-furnace plant, having in combi-
nation a depressed passage, chutes extending from the ore pile into such passage, cars movable along the passage, a skipway extending under the passage, a skip movable along such way and a storage-bin arranged to receive the contents of the car, and to discharge its contents into the skip, substantially as set forth.

In testimony whereof I have hereunto set my hand.

WALTER KENNEDY.

Witnesses:
DARWIN S. WOLCOTT,
F. E. GAITHER.