

<i>Slags.</i>						
First slag—						Per Cent.
Iron	..	..	..	..	..	4.22
Second slag—						
Iron	..	..	..	..	..	7.59
Third slag—						
Iron	..	..	..	..	..	2.26
Lime	..	..	..	..	..	42.10

STEEL INGOTS.

The steel ingots were forged down to square bars, and cold and forging tests carried out on them at an adjacent works, and other bars were forwarded to London for further tests.

The forging tests made in Darlington were satisfactory; the material forged under the hammer without any signs of red shortness, and welded fairly well. A cold-bend test was made by bending under the steam-hammer a $1\frac{1}{4}$ in. square bar, and this bent through an angle of 155° before fracture.

The results of mechanical tests made in London were as follows:—

Tensile Tests.

Laboratory No. 3271.

Ultimate strength, 49.6 tons per square inch. Yield-point, 35.4 tons per square inch. Reduction of area, 23 per cent. Elongation in $4\sqrt{\text{area}}$, 15.2 per cent. Fracture, two-thirds crystalline, one-third silky.

Cold-bending Tests.

Dimensions, 1.40 in. $\times$ 1.00 in. (planed). Bent over 3-in.-diameter bearing. Broke after passing through 65° . Crystalline.

These results were quite satisfactory, and about what would be expected from steel of this grade.

CASTINGS.

The pigs from heats 9 and 10 were mixed together and melted in the cupola, the metal then being cast into test bars and different castings.

One of the 2 in. $\times$ 1 in. test bars tested at the works for transverse strength gave the following results: Breaking-strain, 24.75 cwt.; deflection, $\frac{1}{16}$ in.

Other bars were brought to London for further mechanical tests. The results of these tests were as follows:—

Tensile Test.

Laboratory No. 3270.

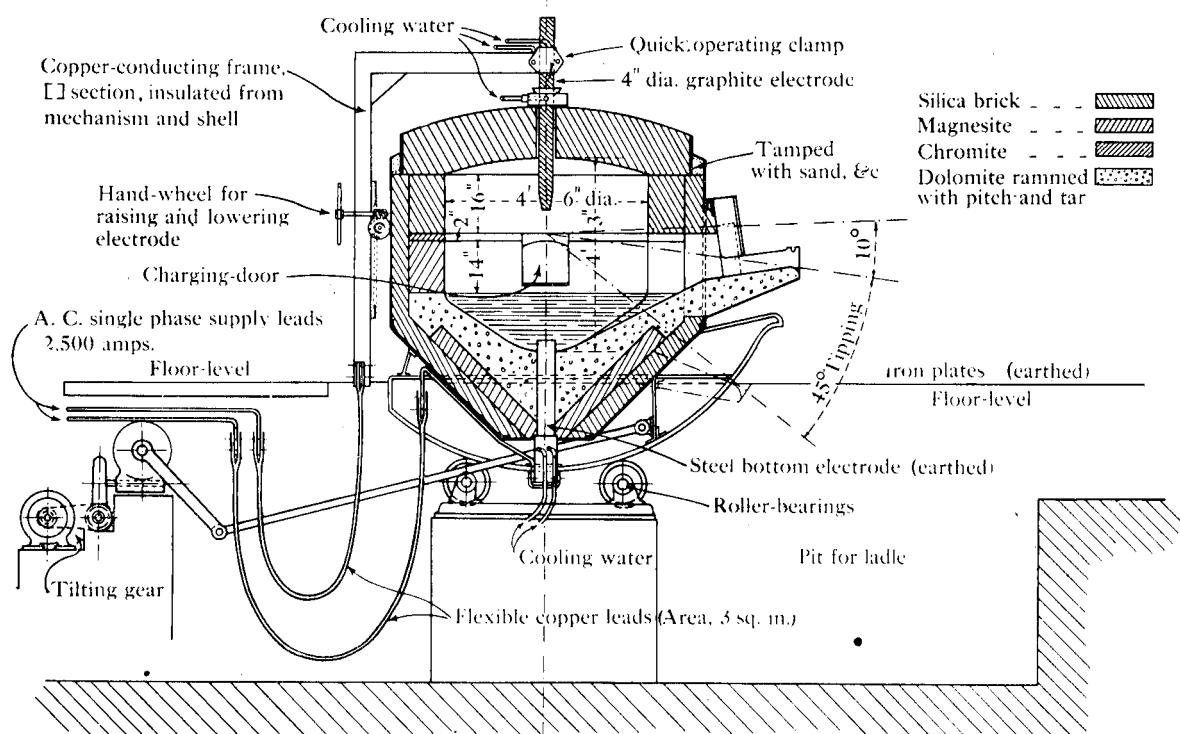
Dimensions: Diameter, 0.565 in.; area, 0.251 sq. in. Tensile strength, 9.1 tons per square inch. Appearance of fracture, sound.

Transverse Test.

Laboratory No. 3269.

Dimensions, 1.01 in. $\times$ 2.04 in. Breaking-strain, 27.5 cwt. Final deflection, 0.51 in. Appearance of fracture, sound.

400 K.W. SNYDER ELECTRIC FURNACE.



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