

AN IMPROVED METHOD OF MAKING STEEL CASTINGS.

The merits of the Walrand-Legenisel steel process were made the subject of discussion at the last meeting of the American Institute of Mining Engineers. This process practically supplements the Bessemer process in such a way as to permit the making of castings directly from the converter. Its essential feature consists in the addition of ferro-silicon (containing from 10 to 12 per cent. of silicon) to the charge in the converter, when the flame drop takes place, and then making an after-blow. The oxidation of the silicon which takes place generates a large amount of heat, which is imparted to the metal—as the combustion product is not volatile—and the consequence is that the steel becomes strongly superheated. The metal is very fluid, produces castings quite free from blow-holes, and permits the making of intricate castings down to a fraction of a pound in weight.

By the usual methods in vogue, the production of sound castings, especially those of small size, has always been attended with great difficulties. The high degree of superheating attained in the new method appears to obviate this difficulty. The new process is successfully employed at large works in France and Germany, and in at least one large works in the United States.

W.

CAPITAL PUNISHMENT BY ELECTRICITY ADOPTED IN MASSACHUSETTS.

The State of Massachusetts will hereafter put its condemned criminals to death by the electric current, instead of by the hangman's noose. The Governor of that State lately signed a bill of the legislature making provision for the change.

W.

USEFUL ALLOYS OF ALUMINUM.

With the considerable cheapening of the cost of aluminum, there has naturally followed a considerable extension of its applications in the arts. The physical properties of the pure metal, however, more especially its low tensile strength, and the difficulty of making soldered joints with it, have now come to be recognized as imposing considerable limitations to its usefulness.

But, although the pure metal has undesirable qualities, it is most fortunate for the future development of the aluminum industry, that it is capable of forming alloys that possess most valuable properties.

Thus, the alloy of copper with from 10 to 11 per cent. aluminum is one of the strongest known, its tensile strength ranging from 80,000 to 90,000 pounds per square inch. It also has a high elastic limit, but a low percentage of elongation (5 per cent. in 1 inch). The presence of silicon increases its strength and hardness, but decreases its ductility. Of the brasses the one containing 3.50 per cent. aluminum, 33.3 per cent. zinc, the rest being copper, is the best and strongest, having a tensile strength of from 75,000 to 85,000 pounds per square inch.

The addition to aluminum of a few per cent. of certain metals (such as nickel, tungsten or silver) likewise exerts a most beneficial influence in modifying the undesirable properties of the metal.

The production of such alloys, suited for a variety of special uses, has been the subject of extended investigation by the manufacturers of the metal, and they have been conspicuously successful. W.

MORE ABOUT "RUBBER FROM CORN."

The brief notices in the technical papers referring to the possibility of utilizing the refuse material of the glucose factories, amounting to about 5 per cent. of the raw material, have recently been supplemented by an interesting communication on the subject in the *Chicago Times*, purporting to give an account of experiments that have been secretly conducted in that city for the past year by the chemists of a large glucose company.

According to the writer of the article in question, the process of manufacture is now so far perfected that the product may, within a few months, be ready for the market.

The following details will be of interest :

"Corn rubber has almost exactly the appearance of the ordinary reddish brown india-rubber. The process of manufacturing is not perfect enough, however, to make it resist heat as well as india-rubber. This has offered the greatest difficulties to the chemists, who are now working to remedy this defect. The oil of corn, from which principally the rubber is made by some secret process, does not oxidize readily, and those who are working on the corn rubber declare this will be an enormous advantage for the new product. Articles manufactured from it will always remain pliable and not crack. Contrary to reports, this new product has not yet been put on the market. It is intended to go on with its experiments till the success of the new substance is assured, and then to go into its manufacture on an immense scale.

"The corn-oil from which the rubber is made, comes from the germ of the corn and not from the hull. The starchy and glutinous portions of the kernel are used in making glucose and starch, while the corn-oil, heretofore, according to the refiners, has been practically useless. The five refineries of the trust have used 21,000,000 bushels of corn in the last ten months, of which about 5 per cent. was refuse. Though forty different products are made by the company, still 5 per cent. was practically waste. By utilizing this waste material in making the new product it is calculated that corn rubber can be sold at 6 cents a pound, 2 cents of which will be clear profit. The corn rubber, it is said, will be adapted to nearly all the uses that ordinary rubber is capable of—from bicycle tires to linoleum. The more refined uses to which the rubber is put, however, will still be a closed field, for the composition of corn rubber will prevent its substitution for india-rubber for scientific uses."

The article proceeds to state that the new product may be advantageously mixed with Para rubber, producing a cheaper article of substantially the same quality for ordinary service, as the genuine rubber. W.

SEEING AT A DISTANCE BY ELECTRICITY.

Much interest has lately been aroused over the alleged discovery by Szczepanik, a Polish inventor, of a method by which vision at a distance is rendered