

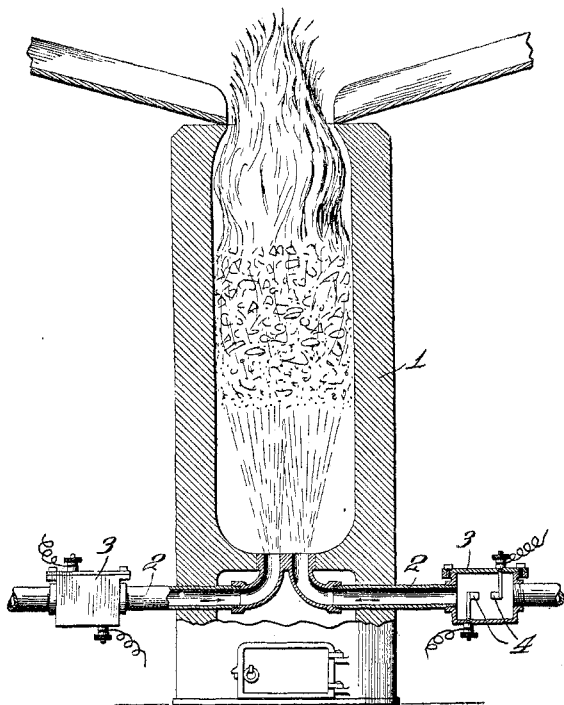
which the copper minerals are distributed. This may be accomplished by running levels and cross-cuts at different horizons, and by sinking shafts to a suitable depth, and in so locating these workings that water or any liquid permeating the rock will seek the lower levels and be collected therein. If, therefore, a quantity of water is distributed over the surface of the rock, or through any of the upper levels, it will percolate through the same leaching out the copper minerals and collecting in the lower workings. The resulting liquids are then removed, as by a pump, for further treatment to extract their metallic contents. It is desirable to carry out the process of extracting the metals from the solutions at or near the location of the ore-body so that the liquids from which the metals have been separated may, if desirable, be again allowed to pass through the rock. It is, however, immaterial, how the water is supplied, it being frequently practicable to divert the water from a running stream, or any reservoir, and to distribute it throughout the upper parts of the ore-body.

975,625. Process of Extracting Iron from its Ores. STEPHEN G. MARTIN, of Chicago, Illinois. Patented Nov. 15, 1910.

This invention relates to a process of extracting iron from its ores and its subsequent conversion into steel, and said process being applicable to the so-called non-Bessemer as well as to Bessemer ores, and by my improved process either one of said ores can be readily converted into iron of such quality as to be immediately available for the Bessemer blow.

The desirable qualities in iron applicable for the manufacture of steel are those of a metal free, or practically free, from sulfur, silicon, phosphorus and the like, and it is well known that such metalloids remain in undesirable quantities in iron produced by ordinary processes in blast furnaces.

The invention consists in dispensing with the use of atmospheric air in the blast furnace and substituting therefor modified or ionized air made by passing atmospheric air through the flame of an electric discharge, and this modified or ionized air passes



into the blast furnace in an absolutely dry state, and in such condition attacks the furnace charge with a high degree of chemical energy, which reduces the charge in much less time than is now required by methods in general use while the re-

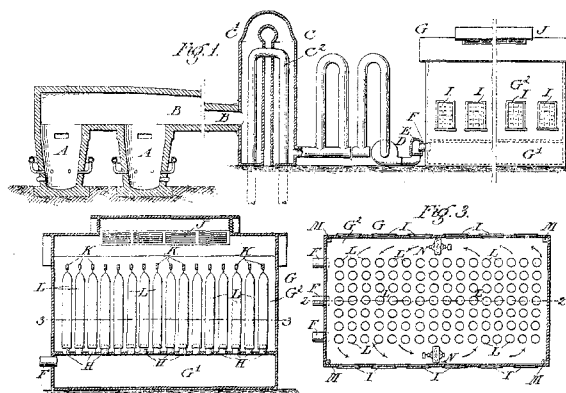
sultant metal is found to be homogeneous iron practically free from all metalloid impurities and of the quality and conditions most desirable in iron which is to be converted into steel by the Bessemer process.

It has been demonstrated that when ordinary atmospheric air is passed through the flame of an electric discharge or through a flaming arc of electricity, a gaseous medium is produced consisting of pure air and gaseous peroxid of nitrogen, and this is the sense in which the applicant uses the expression "modified or ionized air," the gaseous peroxid of nitrogen being the active agent in the process. This gas is conducted into the furnace as rapidly as it is formed. Under these conditions dissociation of the gas (the temperature of the furnace being taken into consideration) does not take place during its passage from its source of supply to the furnace. It is, therefore, not necessary that means be provided to insure stability of the gas.

975,768. Apparatus for Manufacturing Sublimed White Lead. LOUIS S. HUGHES, of Joplin, Missouri. Patented Nov. 15, 1910.

This invention relates to apparatus for the manufacture of lead sulfate pigment and particularly to the construction of the screen or bag house used in separating the pigment from the gases from the furnaces wherein the sulfate is produced.

The lead sulfate pigment known in the market as "sublimed white lead" is made by treating lead-bearing material in oxidizing furnaces adapted to convert the lead in large part into a finely divided "fume" of lead sulfate, and the gases and fume



issuing from the furnace after being subject to various treatments to eliminate heavy and discoloring impurities are passed through cooling flues to reduce their temperature and then carried to the bag house where the pigment is separated from the gases.

The lead sulfate pigment as heretofore made has been found liable to harm when mixed with oil, and after many tests and experiments it has been ascertained that this tendency is due to the occlusion in the pigment of acid compounds of sulfur either SO_2 or H_2SO_3 .

The patentee claims to have discovered that the presence of the injurious acid in the pigment can be avoided by maintaining the gas and fume up to and during the screening operation at temperatures so high that the acid is maintained in dry vaporous form and thus prevented from becoming occluded in the pigment since it passes freely through the screen bags with the gases.

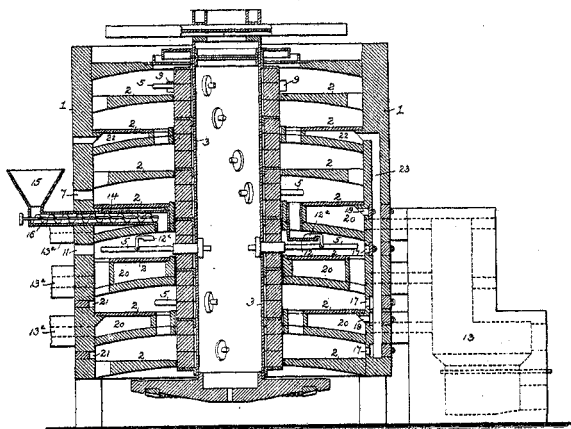
As heretofore constructed and used the screen chamber or bag house used in the separation of the furnace gases from the pigment has been quite freely ventilated, it being considered and used as, in effect, a part of the gas-cooling system, and free ventilation being also desired to get rid of poisonous gases in the bag house, and thus make it possible for attendants to enter it.

The invention consists in using in connection with the producing furnaces and cooling flues a bag house constructed with closed walls and opening only at its top so that the bag house will constitute in effect a part of the flue system of the furnace in which the fabric bags are already surrounded and submerged by an atmosphere of furnace gas maintained at a constant and, as compared with former practice, a high temperature. The temperature must not exceed 350° F. in view of the danger of burning or charring the bags, and it must not be less than 250° F. to secure the elimination of the acid compounds of sulfur.

976,525. Treating Sulfids or Sulfates. UTLEY WEDGE, of Ardmore, Penna. Patented Nov. 22, 1910.

The object of this invention is to facilitate the elimination of sulfur in roasting sulfids or sulfates, such as those of zinc or nickel.

In the roasting of sulfids or ores containing the same, the elimination of the sulfur remaining after the sulfid has passed through the preliminary stages of the roasting process requires the employment of an objectionably high temperature and even in such case the sulfur is not completely eliminated and objectionable amounts of sulfur are likely to be left in the



calcined or roasted material, owing to the formation of basic sulfates which are difficult to roast. In order to overcome this difficulty the patentee combines with the material, after it has passed through the first stages of its treatment, in the roasting furnaces, a reagent which will reduce the basic sulfates, the elimination of the remaining sulfur content down to the point desired being then readily effected without the employment of an objectionably high temperature during the latter part of the treatment.

The accompanying illustration shows the apparatus employed in the practice of patentee's process.

INDUSTRIAL AND TRADE NOTES.

GERMAN POTASH CONTRACTS.

Robert S. Bradley, of Boston, who is chairman of the board of directors of the American Agricultural Chemical Co., has issued the following statement in regard to the German potash situation, which recently assumed such an acute phase as to necessitate the sending of a special investigator over there.

"The potash business has been controlled by a German syndicate for more than 30 years. This control has been exercised not only over the production of the commodity, but its sale in all the markets of the world. It has been the custom to form such a syndicate for a period of five years, and the

last syndicate expired by limitation at midnight of June 30, 1909.

"For months before attempts had been made to form a new syndicate. I had been in Berlin for some time investigating and preparing to buy potash in case an opportunity was offered. By midnight of the day mentioned the delegates representing about 60 mines, who had been in session, had failed to come to an agreement. This caused an open market at the moment and I immediately made contracts running two years, together with option to run one year on a future contract period of five years. This covered the entire requirements of the American Agricultural Co. for seven years.

"At half past 1 o'clock that same morning, the president issued an edict calling a meeting of the delegates for 9 o'clock when a new syndicate was formed. This, of course, closed the opportunity to buy potash at less than syndicate prices.

"The contracts I had made were reported, of course, to the new syndicate and the news caused some consternation among the delegates because the prices were about 35 per cent. below the prices that had been ruling. For example, the syndicate price of muriate of potash landed in New York was \$33 a ton, while according to my contract it would be about \$20.

"In August they sent representatives over here to negotiate for a compromise of my contracts, but without result. The next month delegates representing about 60 American manufacturers went to Berlin and obtained a duplication of my contracts in consequence of their holding contracts made with one of the Schmittmann mines, whereby the latter guaranteed to these American manufacturers the same prices that my company might obtain. Schmittmann was therefore legally bound to give these manufacturers the same terms I had obtained, so that now instead of a matter of \$6,000,000 being involved there was \$25,000,000.

"Geheimrath Kempner and Herr Bielman, another director of the potash syndicate, came over here the following December. We volunteered to meet them half way and divide the difference between the syndicate prices and the contract prices, because they presented a draft of an Imperial potash law which had been into the Bundesrath. This bill imposed an export duty on potash that would countervail the prices mentioned in our contracts.

"They accepted our offer on principle, but in figuring out the prices, they raised them sufficiently to countervail all the advantages left on a half-way compromise basis. We then broke off negotiations. Secretary Knox made a strong, emphatic protest to the Imperial German Government through Ambassador Hill, and the potash bill was subsequently withdrawn.

"Immediately thereafter, the United States and Germany completed a commercial treaty which gave Germany the benefit of the American minimum tariff. In May following, the Reichstag passed a potash law more drastic and more damaging in its effects on American contracts than the original Bundesrath bill which had been withdrawn at the protest of this government. But, at the same time, Ambassador Hill received assurance from the German foreign office that the law, as finally amended, would not invalidate, impair or affect the American contracts.

"Notwithstanding this assurance all shipments of potash, after the law went into effect, were taxed \$22 a ton over the contract price. This made the price of muriate of potash \$42 a ton, instead of \$20. The law imposes a duty in the form of a penalty tax for production over the allotted quota of a mine, and as the two mines which hold the American contracts are the only ones which overproduce, the tax affects only American contracts, and this is therefore absolutely discriminatory against American citizens.

"Negotiations were opened in Berlin. The American committee for the second time made a voluntary proposal to the Germans to divide the difference and meet them half way,