

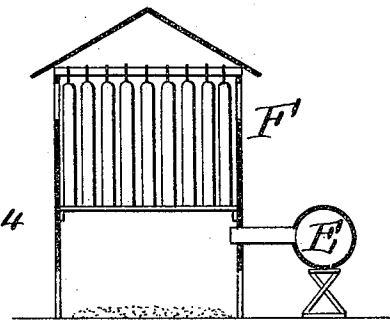
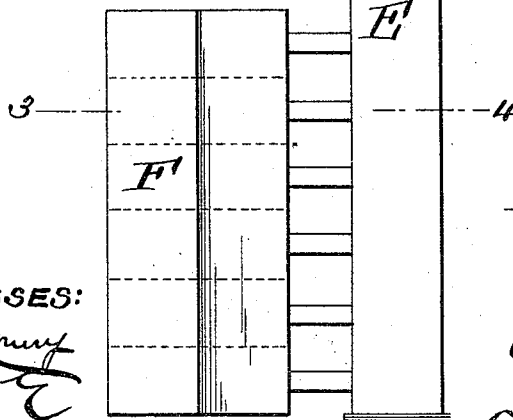
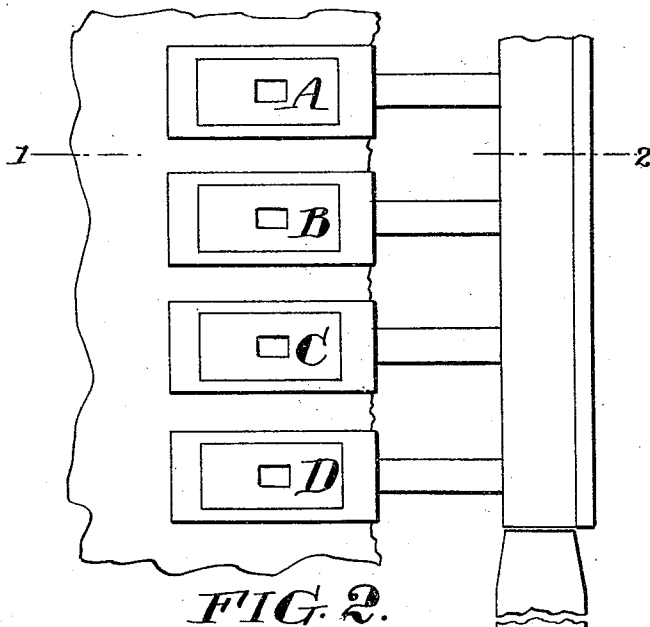
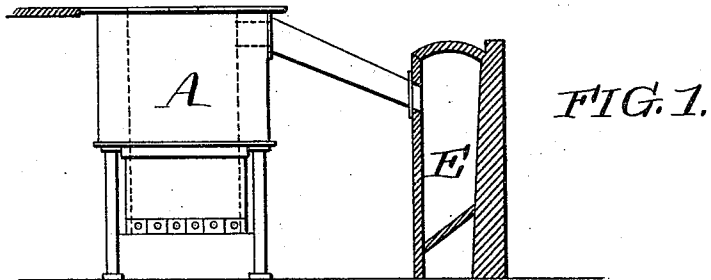
(No Model.)

E. O. BARTLETT.

METHOD OF AND APPARATUS FOR SAVING FUMES OF LEAD SULFID.

No. 515,038.

Patented Feb. 20, 1894.



WITNESSES:

Henry Drury
D. Stewart

INVENTOR:

Esyre O. Bartlett
by his atty
Francis T. Chambers

UNITED STATES PATENT OFFICE.

EAYRE O. BARTLETT, OF JOPLIN, MISSOURI, ASSIGNOR TO THE WESTERN
PATENT COMPANY, OF DENVER, COLORADO.

METHOD OF AND APPARATUS FOR SAVING FUMES OF LEAD SULFID.

SPECIFICATION forming part of Letters Patent No. 515,038, dated February 20, 1894.

Application filed December 23, 1892. Serial No. 456,121. (No model.)

To all whom it may concern:

Be it known that I, EAYRE O. BARTLETT, of Joplin, county of Jasper, State of Missouri, have invented a certain new and useful Improvement in Methods of and Apparatus for Saving Fumes of Lead Sulfid, of which the following is a true and exact description, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to the saving of the metallic fume (chiefly of lead) driven off from high cupola shaft furnaces such, for instance, as are used in the smelting of argentiferous lead ores.

Heretofore lead fumes generated in compound reducing and oxidizing furnaces, such for instance as a low cupola furnace have been saved by passing the smoke from such a furnace through cooling flues and finally through a series of fabric screens, usually in the form of bags. The lead fume given off from such furnaces is in the form essentially of a sulphate and is thoroughly incombustible, and the oxidation of carbon is thorough, so that it passes from the furnace in the form essentially of carbonic acid gas. It has also been attempted to save the lead fume from high cupola stack furnaces, such as are used for smelting argentiferous lead ores, but all such attempts prior to my present invention have been abandoned, for the following reasons, to wit: Because in such furnaces (which are essentially reducing furnaces when in normal operation) the lead fume is driven off as a sulphide, and the carbon essentially as carbonic oxide gas, and both the fume and the carbonic oxide are highly combustible; now as long as the furnace is working normally the flues leading therefrom and the bag house attached thereto are safe enough, because the combustible matter is not in admixture with a dangerous amount of air or oxygen in a condition to unite with them, and also because the gases and fume are not unduly hot, but such furnaces of course do not always work normally; it is sometimes necessary to bar them down, and from this or other causes they sometimes become essentially oxidizing, so that the lead fume is converted into lead sulphate, the carbon to carbonic acid gas, and a large quantity of oxygen also passes through

the furnace uncombined and mixes with the combustible gases in the flues. Not only is this true, but under such conditions all the gases making up the furnace smoke enter the flues at a greatly increased heat, and the effect of all these causes is to render probable the formation and ignition of a combustible or explosive mixture of gases and fumes, at a temperature sufficient to ignite them. Now I have discovered that by combining a series of such high cupola blast furnaces with a common flue and screen system, the lead fume may be saved under safe conditions, because it will always be possible to insure the normal working of a large proportion of such series of furnaces, and the gases from such normally working furnaces will so far dilute the gases from the abnormally-working furnaces and so far diminish the temperature thereof that the resulting mixture will be essentially incombustible under the existing conditions. By this arrangement and method of operating the furnaces I have obviated the dangers which had caused the abandonment of the earlier attempts all made with single furnaces, and in which the operators never dared to bar down the furnace without allowing essentially the most part of the smoke containing metallic values to escape to the air direct and without screening.

Reference being now had to the drawings which illustrate my invention, Figure 1 is a side elevation on section line 1—2 of Fig. 2. Fig. 2 is a plan view of a series of high cupola stack furnaces combined with common flue and screen system, and Fig. 3 a cross section of the screen house on line 3—4 of Fig. 2.

A, B, C, D, indicate each a high cupola stack furnace.

E, is the cooling flue and F, the screen system. The operation of the parts has been sufficiently described already to be thoroughly understood by anyone skilled in the art, and I will only mention in addition that while for obvious reasons it is desirable to use a large number of furnaces in combination, the beneficial results of my invention may be secured by the use and careful management of two, with a common flue and screen system.

Having now described my invention, what

I claim as new, and desire to secure by Letters Patent, is—

5 The method of treating lead ores which consists in smelting separate portions of the ore in a series of separate high cupola furnaces, collecting and commingling the fumes and furnace gases driven off from the separate furnaces and passing the combined pro-

duct through a screen system all substantially as described and for the purpose of preventing the ignition of the lead sulphides and other combustible components of the furnace gases.

EAYRE O. BARTLETT.

Witnesses:

W. A. HACKER.

W. H. PICHER.