

(No Model.)

M. W. ILES.
APPARATUS FOR CONDUCTING AND SCREENING GASES FROM
METALLURGICAL FURNACES.

No. 475,774.

Patented May 31, 1892.

FIG. 1.

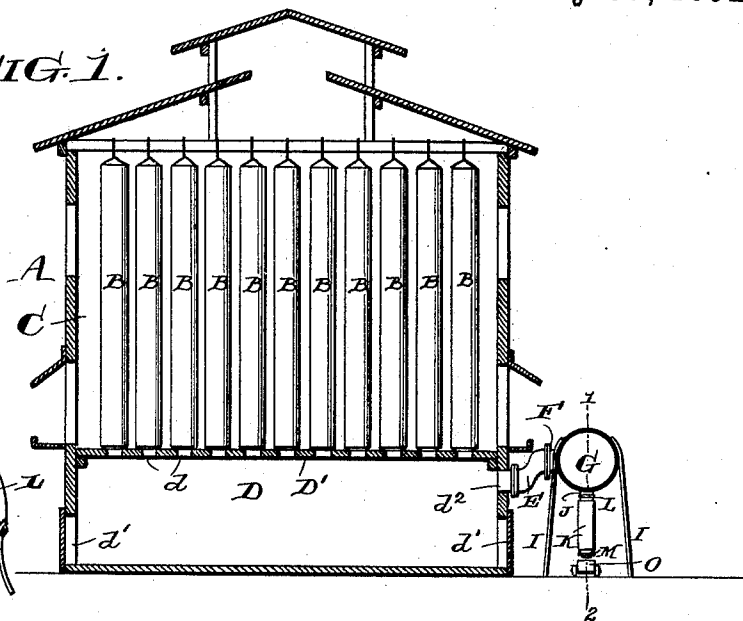


FIG. 4.

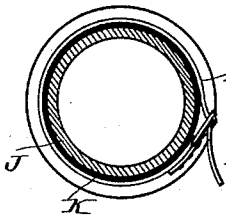


FIG. 3.

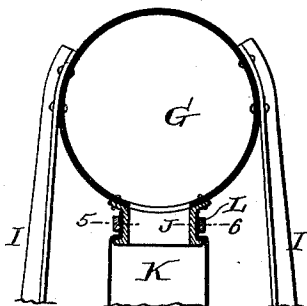


FIG. 5.

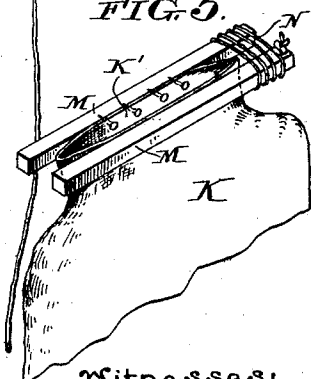
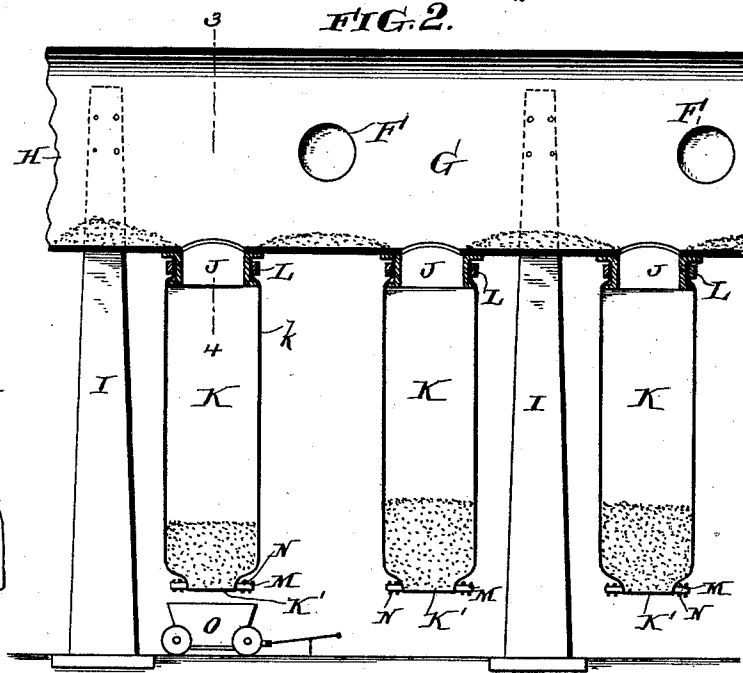


FIG. 2.



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APPARATUS FOR CONDUCTING AND SCREENING GASES FROM METALLURGICAL FURNACES.

SPECIFICATION forming part of Letters Patent No. 475,774, dated May 31, 1892.

Application filed March 22, 1892. Serial No. 425,971. (No model.)

To all whom it may concern:

Be it known that I, MALVERN W. ILES, of the city of Denver, county of Arapahoe, and State of Colorado, have invented a certain new and useful Improvement in Apparatus for Conducting and Screening Gases from Metallurgical Furnaces, 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 devices or structures used for conducting the gases, fumes, &c., driven off from metallurgical furnaces, especially smelters, to a screening-chamber or "bag-house," as it is generally called, in which the final separation of the gaseous and solid particles is effected. In structures of this kind the mains or conduits through which the gases, &c., pass from the furnace to the bag-house are necessarily made of considerable length, and as far as practicable they are made of sheet metal and situated in the open air so as to cool the gases and insure that when they reach the bag-house they will not be hot enough to destroy the fabric, screens, or bags situated therein. A considerable quantity of metallic fumes and other solid particles is deposited in the main delivery-pipe, and provision must be made to enable this deposit to be removed from time to time, and it has been customary to form hoppers in the bottom of the elevated main, doors in the bottom of which are opened from time to time to permit the dust and deposited fume to escape. This hopper system has some drawbacks, among which may be noted that it is difficult to avoid loss in emptying the hoppers; also that the hoppers cannot be opened while the gases, &c., are passing through the main without permitting their escape; nor do the hoppers obviate the danger of fire in the main, which is one of the most serious and troublesome difficulties met with in using the system.

To overcome the difficulties incident to the use of metallic hoppers I have devised an arrangement by which in place of hoppers metal thimbles are secured around the openings in the bottom of the main, and to these thimbles are secured the open ends of depending bags of strong fabric, the lower ends of which can be opened or closed at will.

Reference being now had to the drawings in which my invention is illustrated, Figure 1 is a sectional elevation of the bag-house and of the main connecting therewith; Fig. 2, a side elevation of a portion of the main provided with my improvement, taken on the line 1 2 of Fig. 1; Fig. 3, a cross-section of the main on the line 3 4 of Fig. 2. Fig. 4 is a section on the line 5 6 of Fig. 3, and Fig. 5 a perspective view showing the device used for closing and opening the ends of the bags.

A is the bag-house, consisting of a bag-room C, situated above a fume-chamber D and separated therefrom by a floor or partition D'.

B B, &c., are bags suspended in the chamber C and connected at their bottoms with openings, (indicated at *d* in the floor D'.)

d' d' are doors leading into the fume-chamber D.

*d*² is a short pipe or thimble leading out of the chamber D. To this thimble *d*² a pipe connection E is united, leading to a thimble F, leading out of the portion G of the main which runs along the bag-house. The continuation of this main leading toward the furnace (not shown) is indicated at H in Fig. 2. The main, it will be observed, is supported by angle-irons I at a considerable distance above the ground. At intervals along the bottom of the main are formed openings around which are secured thimbles J, and to these thimbles are secured the strong fabric bags K K, &c., a strap L being conveniently used, as shown, to secure the tops of the bags and thimbles together. On each side of the open bottoms K' of the bags is secured a bar M, and by clamping these two bars M M together, as by tying a cord N around their projecting ends, the bottom of the bag is securely closed, and when it is desired to empty the bags it is only necessary to untie the fastening N, when the mouth K' will gap open, permitting the accumulated fumes, &c., to fall into a car or barrel, (indicated at O.)

Among the advantages of my new construction I will note the following: When it is desired to empty the fumes which have collected in the bag, it may be done, without stopping the operation of the device, by simply tying a cord around the upper part of the bag—as, for instance, at a point marked *k* in Fig. 2. This having been done the bottom of the bag

is opened and the dust contained permitted to run out, then securely fastened back again, and the string removed, none of the gases and fumes being permitted to escape during this operation. As the mouth of the bag can be placed in or immediately above the barrel or ear O, the contents will be dumped without loss. By removing the bags more convenient and ready access is given to the main itself when it is desired to clean it out; but the most important advantage gained lies in the fact that my new arrangement serves both to diminish the risk of an extensive fire in the main and has a safety valve or alarm. In case a fire occurs it serves the first purpose, because the dust and fume collected in the bags are completely removed from contact or communication with the dust in the pipe, and serves the second purpose, because when a fire actually does communicate to the bag the bag is at once burned, and the fire thus announced in this manner prompt measures can be taken to extinguish it.

I am aware that it is not new to use bags for collecting fumes which depend from conduits which bring the fumes and gases from the furnaces; but such bags have heretofore been used only as and in the same relative position as the bags B B, &c.; and my invention consists in using such bags in the way

described on the main delivery-pipe leading to the bag-house proper and in the place of the hoppers heretofore used on such mains, whereby I gain the advantages above described.

Having now described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In combination with a bag-house for screening the gases driven off from metallurgical furnaces, a main delivery-pipe H G, leading thereto and elevated above the ground, a series of thimbles J, extending down at intervals from the bottom of the delivery-pipe, and a series of fabric bags K, secured at top to thimbles J.

2. In combination with a bag-house for screening the gases driven off from metallurgical furnaces, a main delivery-pipe H G, leading thereto and elevated above the ground, a series of thimbles J, extending down at intervals from the bottom of the delivery-pipe, and a series of fabric bags K, secured at top to thimbles J and having bars M M secured on each side of their depending mouths.

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