(No Model.)

F. W. GORDON.

DUST CATCHER FOR BLAST FURNACES.

No. 381,774. Patented Apr. 24, 1888.

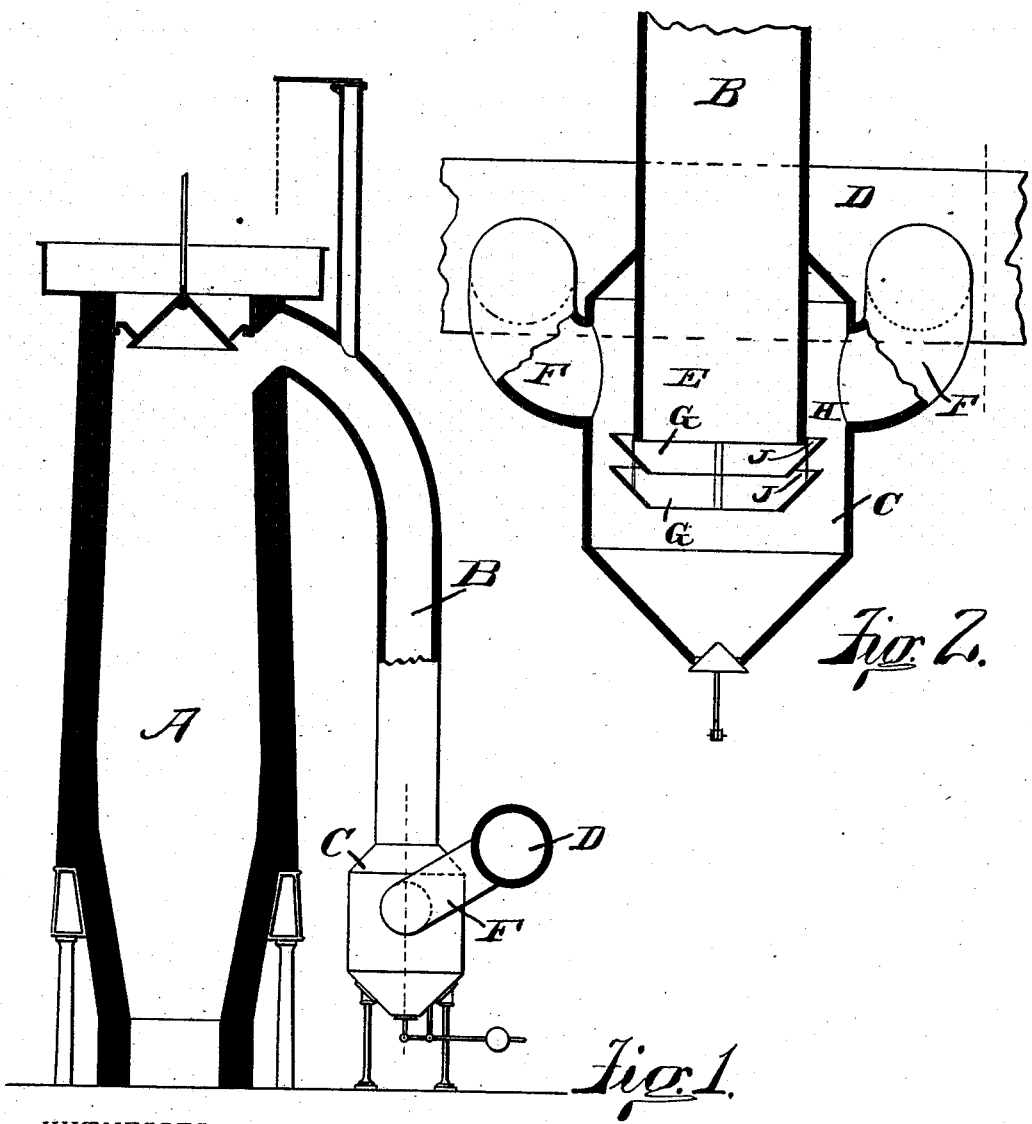

Fig. 2.

Fig. 1.

WITNESSES:
W. A. Seward.
C. A. Fisher.

INVENTOR:
Fred W. Gordon
by James W. See.
ATTORNEY.

UNITED STATES PATENT OFFICE.

FRED. W. GORDON, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO GORDON, STROBEL & LAUREAU, OF SAME PLACE.

DUST-CATCHER FOR BLAST-FURNACES.

SPECIFICATION forming part of Letters Patent No. 381,774, dated April 24, 1888.

Application filed August 1, 1887. Serial No. 245,795. (No model.)

To all whom it may concern:

Be it known that I, FRED. W. GORDON, of Philadelphia, Philadelphia county, Pennsylvania, have invented certain new and useful Improvements in Dust-Catchers for Blast-Furnaces, of which the following is a specification.

Gas flowing from blast-furnaces contains much dust, &c., which it is desirable to intercept before being carried to the horizontal conduits, where it is liable to accumulate and do harm. My improved dust-catcher has been devised with a special reference to such conditions, and the same will be readily understood from the following description, taken in connection with the accompanying drawings, in which—

Figure 1 is a vertical longitudinal section of a blast-furnace having its outlet gas-pipe provided with my improved dust-catcher, the dust-catcher appearing, in this view, in elevation; and Fig. 2, a vertical horizontal section of the dust-catcher, taken upon a plane at right angles to the plane of Fig. 1, this view being upon a somewhat enlarged scale.

In the drawings, A indicates a blast-furnace; B, the usual downcomer, through which the gas is conveyed from the top of the furnace downward to the gas-main; C, the usual dust-catching chamber at the foot of this downcomer, this chamber being, as usual, an enlargement at the foot of the downcomer and provided at its base with the usual discharge-valve for accumulated dust from the chamber; D, the usual gas-main leading from the chamber off to points of consumption of the gas; E, the lower end of the downcomer projecting downward into the dust-catching chamber C; F, two outlet-pipes leading from the dust-catching chamber C, above the level of the lower end of the projection E, into communication with the gas-main D; G, a pair of annular deflecting-rims suspended below the mouth of the projection E, one rim below the other, each rim having the form of the frustum of a cone with the large end upward, the larger diameters of the rim being larger than the projection E and smaller than the chamber C, one rim being disposed a short distance below the mouth of the projection E, and the other rim a short distance below the first rim, the rims being sustained in position, in the illustration, by suspension-bars secured to the rims and to the projection E; H, the annular spaces between the peripheries of the rims and the interior of the chamber C; and J the annular spaces just within the peripheries of the rims, the upper one between the upper rim and the lower edge of the projection E and the lower one between the walls of the two rims.

The dust-laden gas descending the downcomer B enters the chamber C, and is deflected upward and finds its way to the gas-main through the outlets F. As the gas leaves the lower end of the downcomer at the foot of the projection E, its flow becomes checked by reason of the lessened area at the bottom of the upper rim. The consequence is that a portion of the gas will be deflected upward at once by the interior surface of the upper rim, and will pass upward through the upper passage J, and find its way thence to the outlet-pipes F. The gas which thus finds its way upward has been sharply deflected by contact with the interior of the upper rim, and its heavier impurities will have proceeded on downward into the bottom of the dust-catching chamber. The gas which has not been thus deflected upward by means of the upper rim will pass out of the upper rim, and a portion of it will be deflected upward by the interior of the lower rim and will find its way upward through the lower passage J, the balance of the gas, together with the heavier dust, passing through the bottom of the lower rim to the lower portion of the dust-chamber, where it becomes deflected upward by the bottom of the chamber, the gas passing upward to the outlet-pipes F through the annular passage H, the upward annular stream striking against the outer inclined lower surface of the rims, which deflect the heavier matters downward into the dust-catcher. There being two of the outlet-pipes F leading from the dust catching chamber, the upward flow of gas becomes fairly distributed, so as to utilize the deflecting properties of the entire surface of the rims.

The gas-main D is illustrated as being located above the dust-catching chamber, the outlet-pipes F leading upwardly from the chamber to the gas-main. If the gas-main be located

below the dust-chamber—as, for instance, when the gas-main is underground, as is very common—the outlet-pipes F will of course lead downwardly to the gas-main. In either event it is essential to my improvement that the outlets F lead outwardly horizontally from the chamber at points above the lower end of the downcomer.

I claim as my invention—

In a dust catcher, the combination, substantially as set forth, of a dust-catching chamber, C, the outlets F, leading horizontally outward therefrom, the downcomer B, projecting downwardly into the chamber below said outlets, and one or more deflecting-rims, G, disposed within said chamber below said projecting end of the downcomer and outlets.

FRED. W. GORDON.

Witnesses:
JNO. TAYLOR,
LOUIS M. WAGNER.