United States Patent [19]

Gurvits et al.

[11] **3,807,140**

[45] **Apr. 30, 1974**

[54] **RECEIVING ELECTRODE OF PLATE-TYPE ELECTROSTATIC PRECIPITATOR**

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[22] Filed: **Feb. 22, 1972**

[21] Appl. No.: **228,198**

[52] **U.S. Cl.** **55/130,** 55/154

[51] **Int. Cl.** **B03c 3/36,** B03c 3/45

[58] **Field of Search** 55/130, 131, 154, 156, 55/128, 129

[56] **References Cited**

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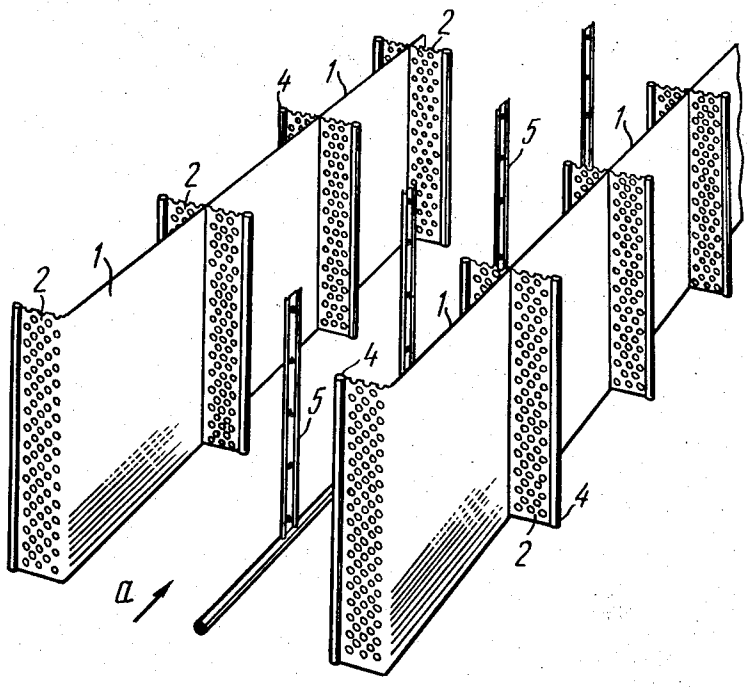
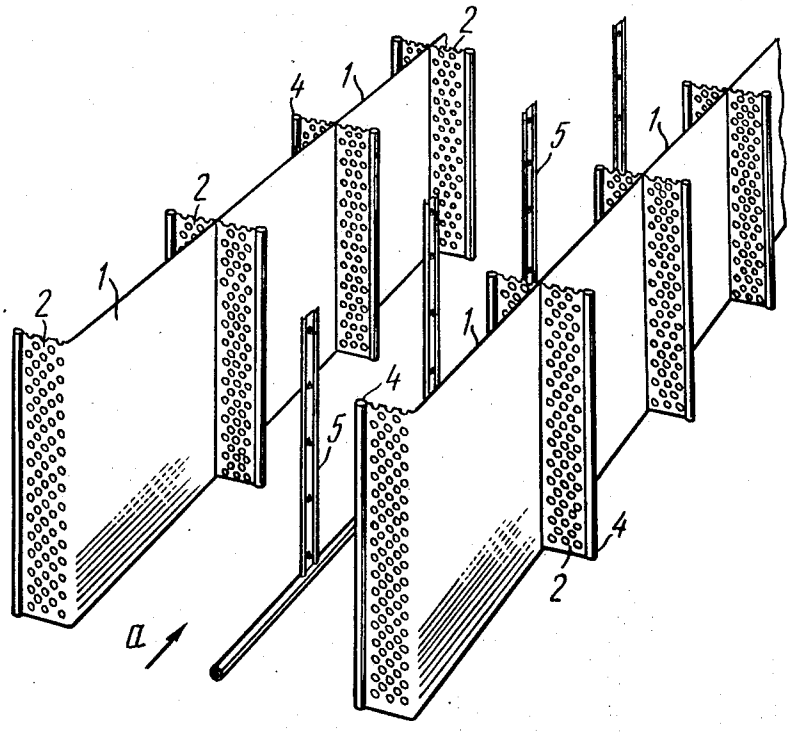
[57] **ABSTRACT**

A receiving electrode of a plate-type electrostatic precipitator comprising electrode projections forming barriers in the path of the dust-laden gas flow, the projections being provided with through holes.

5 Claims, 1 Drawing Figure




1
2
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a

RECEIVING ELECTRODE OF PLATE-TYPE ELECTROSTATIC PRECIPITATOR

The present invention relates to electrostatic precipitators adapted to remove suspended solid particles from dust-laden gas flow and more specifically it relates to the receiving electrodes of plate-type electrostatic precipitators with a horizontal direction of gas flow.

Known in the art are receiving electrodes of plate-type electrostatic precipitators in the form of a number of vertical plates or strips with projections intended to serve as barriers to the path of the gas flow. These projections are intended to diminish the amount of precipitated dust particles carried away from the electrode surface by creating stagnant zones.

The projections of the above-mentioned electrodes are formed by bending the edges of the plates in such a manner that they are positioned across the gas flow (see, for example, Pat. No. 859,870, Cl.39 (1) j, England).

Also known in the art are receiving electrodes of plate-type electrostatic precipitators in the form of a flat metal plate. The entire surface of the plate is provided with projections formed by angles fastened rigidly to one side to the plate while the other side forms a barrier in the path of the gas flow washing it (see, for example, U.S. Pat. No. 3,125,426, Cl.55–130, USA).

Also known in the art are electrodes of plate-type electrostatic precipitators having projections in the shape of right-angled triangles. The base of these right-angled triangles is rigidly fastened to the plate and the projections are also located across the gas flow washing the plate (see, for example, U.S. Pat. No. 2,826,262, Cl.55–130, USA).

The main disadvantage of the known receiving electrodes is that in a high velocity gas flow, the gas being cleaned creates powerful turbulence which disturbs the stagnant zone and causes the particles of already-settled dust to be carried back into the main gas flow which impairs the efficiency of the gas cleaning in the electrostatic precipitators.

To prevent carrying away of the already-settled dust, the velocity of the gas flow in the known precipitators has been reduced which has also lowered the precipitator efficiency.

To increase the efficiency of the electrostatic precipitators, it becomes necessary to increase considerably the overall dimensions of said precipitators which renders them bulky and costly in operation.

An object of the invention resides in the provision of a precipitator eliminating the aforesaid disadvantages.

Another object of the invention is to increase the efficiency of gas-cleaning of electrostatic precipitators.

The above (and other objects) of the invention is accomplished by providing a receiving electrode for the plate-type electrostatic precipitator in the form of a surface washed by a gas flow and provided with projections forming barriers in the path of the gas flow wherein, according to the invention, said projections have through holes for the passage of gas.

It is preferable that the projections of the receiving electrode have the shape of a lattice.

An advantage of the present invention is that, due to the construction of the electrode with projections having through holes, the already-settled dust is prevented from being carried back into the main gas flow.

The lattice shape of the projections ensures a high efficiency for the precipitator and improves the standard of gas cleaning.

The sole FIGURE of the drawing is a perspective view diagrammatically illustrating a precipitator with electrodes according to the invention.

Referring to the drawing, therein is seen a receiving electrode consisting of a number of vertical strips **1** provided with projections **2** which have through holes **3**. To reduce distortions of the electric field, the ends of the projections **2** have tubular edges **4**. Located between the receiving electrodes are corona electrodes **5**.

In this actual embodiment of the invention, the electrodes are made in the form of a number of vertical strips though they can be made of a single solid plate with projections rigidly fastened thereto.

The projections located on the surface of the electrode are made integrally with the latter though they can also be secured to the electrode with or without a clearance.

The shape of the holes may vary within wide limits; for example, they can be round, rhomboid, etc.

The electrostatic precipitators have a number of receiving electrodes arranged so that they form passages for the flow of gas to be cleaned.

Installed under the electrodes are hoppers or other devices (not shown in the drawing) for accumulating the dust shaken down from the surface of the electrodes.

The electrostatic precipitator operates as follows.

The dust-laden gas flow enters the precipitator and moves into the passage between the receiving electrodes. The direction of the gas flow is shown by arrow *a*.

Moving through the passage, the gas flows through the latticed projections **2** behind which a zone is created of uniform and orderly flow at low velocities which reduces the amount of already-settled dust carried away into the main flow and assists in a more intensive accumulation of dust on the electrode.

The corona electrodes **5** installed between the receiving electrodes produce a corona discharge which charges the particles of dust.

Acted upon by the electric field created by the potential of the corona electrodes **5**, the charged particles move towards the strips **1** and settle there.

After the strips **1** have been covered with a layer of dust, the electrodes are shaken by an impact.

The layer of dust accumulated on the strips **1** starts moving down along the surface of the receiving electrode and falls into the hopper located under the electrodes.

In the illustrated embodiment, the angle between the projection **2** and the gas flow is 90° though it can be other than 90°.

Electrostatic precipitators with receiving electrodes realized in accordance with the invention can be used in energy producing, chemical, metallurgical and cement industries as well as in the other branches of technology involving the filtration of gas flow.

What is claimed is:

1. A receiving electrode for a plate-type electrostatic precipitator comprising: an electrode member having a receiving surface washed by a flow of dust-laden gas, projections arranged on said receiving surface to form barriers in the path of flow of the dust-laden gas and

close only a part of the cross-sectional area of a respective passage, said projections having holes for the passage of gas therethrough, said holes connecting the gas flow region before the projections with the gas flow region after the projections.

2. An electrode as claimed in claim **1** wherein said projections are flat plates, said holes extending completely through said flat plates.

3. An electrode as claimed in claim **2** wherein said flat plates extend perpendicularly from said receiving surface.

4. An electrode as claimed in claim **3** wherein said flat plates have free inner ends extending into said passage, and have tubular edges at said inner ends.

5. An electrode as claimed in claim **3** wherein said flat plates are rectangular and substantially uniformly perforate with said holes.

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