Jan. 12, 1965 T. JÄDERBRANDT 3,165,388

ELECTROSTATIC PRECIPITATORS

Filed Oct. 20, 1961

FIG. 1.

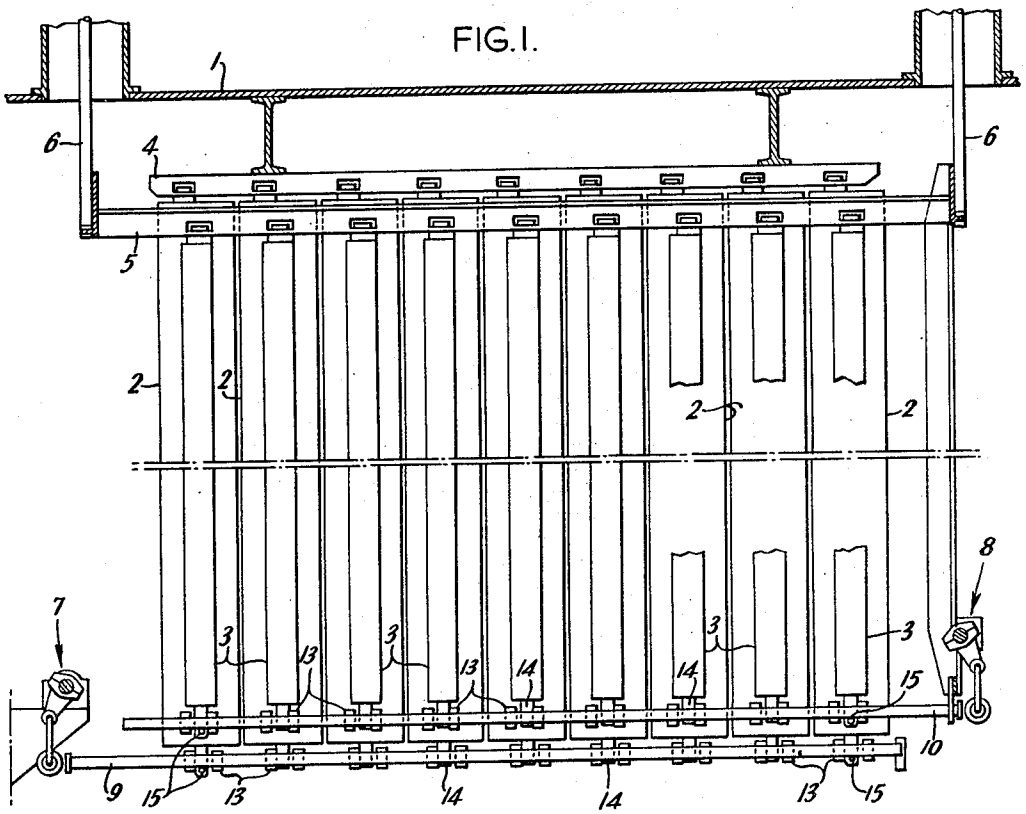


FIG. 2.

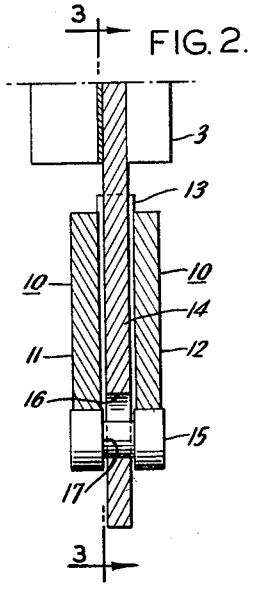
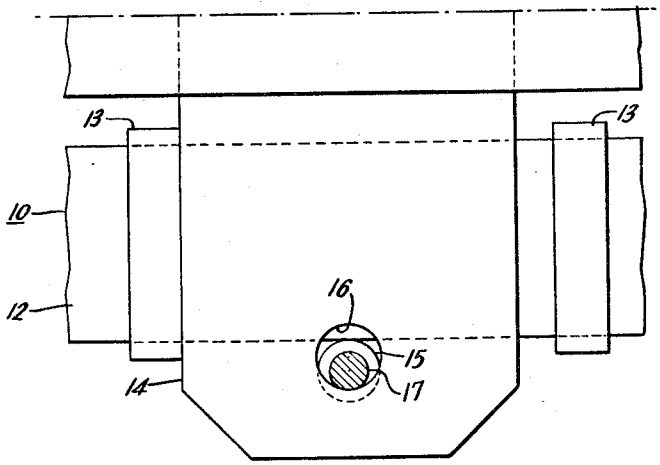


FIG. 3.



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United States Patent Office

3,165,388

Patented Jan. 12, 1965

1

3,165,388

ELECTROSTATIC PRECIPITATORS

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Filed Oct. 20, 1961, Ser. No. 146,549
Claims priority, application Sweden, Oct. 20, 1960, 10,038/60
1 Claim. (Cl. 55—112)

The present invention relates to a device for supporting the rapping bars for electrodes in electrostatic precipitators. The rapping bars are made of two flat iron rods joined by means of spacers and are supported by means of legs on the lower end of the electrodes which project between the flat iron rods of the rapping bars.

Rapping bars being designed and supported in the above described manner are now commonly used in electrostatic precipitators in order to vibrate the electrodes for cleaning the same. It has been found, however, that because of rapidly occurring corrosion the screw bolts or pins used for the support of the rapping bars are very difficult to dismount when necessary for repair or exchange of damaged electrodes. Furthermore, these bolts with their projecting ends often cause flash-overs disturbing the normal running of the precipitator.

The invention eliminates in a simple manner said drawbacks and makes possible a handy mounting and removal of such rapping bars. To this end, the invention provides holes in said legs for the insertion of bolts which fit freely within the holes and have a length substantially corresponding to the thickness of the rapping bars. The bolts are provided with a transverse groove, the width of which slightly exceeds the thickness of said legs, the weight of the rapping bars causing the groove of the bolts to engage over the edges of said holes in the legs for the purpose of interlocking the bolts with their respective legs.

The invention will now be described more in detail with reference to the accompanying drawing showing an exemplifying embodiment of the invention and wherein

FIG. 1 shows a vertical section through an electrostatic precipitator provided with rapping bars supported in accordance with the invention;

FIG. 2 is a sectional view through an emission electrode leg and the rappnig bar supported thereby; and

FIG. 3 is a sectional view taken on the line 3—3 of FIG. 2.

In the drawing 1 designates the casing of an electrostatic precipitator arranged for a horizontal gas flow and equipped with a number of precipitating electrodes 2 arranged in rows parallel with the gas flow and with emission electrodes 3 arranged between the first mentioned electrodes in a similar manner in parallel rows. The collecting electrodes at their upper ends are supported for swinging movement in a framework 4 mounted on the casing while the emission electrodes are fastened to a framework 5 which in turn is supported by means of supporting rods 6 insulated from the electrostatic precipitator casing. A rapping mechanism of a conventional design is provided at 7 for cleaning the precipitating electrodes and a corresponding rapping mechanism is provided at 8 for the emission electrodes. These rapping mechanisms are arranged to operate upon rapping bars 9 and 10 respectively located at the lower ends of the electrodes. The rapping bars in turn are arranged to act upon the separate electrodes.

The rapping bars, as will be more evident from FIG. 2, are made of two flat iron rods 11 and 12 with spacers 13, which act upon legs 14 depending from the lower ends

2

of the electrodes and projecting between the flat iron rods. The bars 9 and 10 are supported by the outer electrodes of each row, the legs of which are somewhat extended to receive the necessary bolts 15 for supporting the rapping bars. In accordance with the invention, the bolts 15 are arranged to be inserted in holes 16 in the legs of said outer electrodes to underlie the rapping bars. The bolts are dimensioned to pass freely through the hole 16 and are manufactured with a length substantially corresponding to the thickness of said rapping bars, and have a central transverse groove 17 therein, the width of which slightly exceeds the thickness of the leg. Thus the holes 16 have a greater first diameter or dimension than the bolts 15 having a second diameter or dimension, the second diameter being less than that of the first diameter so as to permit the bolts free passage through the holes. After the bolts have been inserted in the holes of the legs they are pressed by the weight of the rapping bars downwardly whereby the groove 17 engages over the edge of said hole 16 in the leg. The bolts in this manner are locked by their respective legs against displacement axially thereof, but may nevertheless be dismounted rapidly and handily, when required. In the case shown the bolts are made with a circular cross section and with the groove 17 extending around the entire circumference, but it is within the scope of the invention that they may also be manufactured with another cross section suited for the actual manufacturing method and with the groove only along a limited part of the circumference of the bolt.

What we claim is:

In an electrostatic precipitator having a casing, electrodes in at least one row in said casing, means suspending said row of electrodes for swing movement, and at least one rapping bar underlying said row for displacing said electrodes, said bar comprising two flat iron rods and spacers interconnecting said rods; means for supporting said bar independently of said casing comprising legs depending from selected electrodes and including portions projecting between said flat iron rods, said projecting portions having holes of a first diameter therein, and bolts passing through said holes, said bolts having a second diameter less than said first diameter so as to pass freely through said holes and underlie and support said bar and having a length substantially coextensive with the overall width of said rapping bar, each bolt having intermediate its ends a transverse groove with a width slightly exceeding the thickness of the marginal portion of the hole in its associated leg and adapted to receive said marginal portion to thereby lock said bolt against displacement axially thereof.

References Cited by the Examiner

UNITED STATES PATENTS

2,812,035	11/57	Sohlman et al.	55—112
3,040,497	6/62	Schwab	55—112
3,113,852	12/63	Steuernagel	55—112

FOREIGN PATENTS

486,827	11/29	Germany.
495,305	4/30	Germany.
249,862	5/48	Switzerland.

OTHER REFERENCES

German printed application, 1,047.174, Dec. 24, 1958.
German printed application, 1,050,313, Feb. 12, 1959.

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