June 9, 1925. 1,541,704

J. GIES

SEMICONDUCTING COLLECTING ELECTRODE FOR ELECTRICAL PRECIPITATORS

Filed Jan. 8, 1924

Fig. 1.

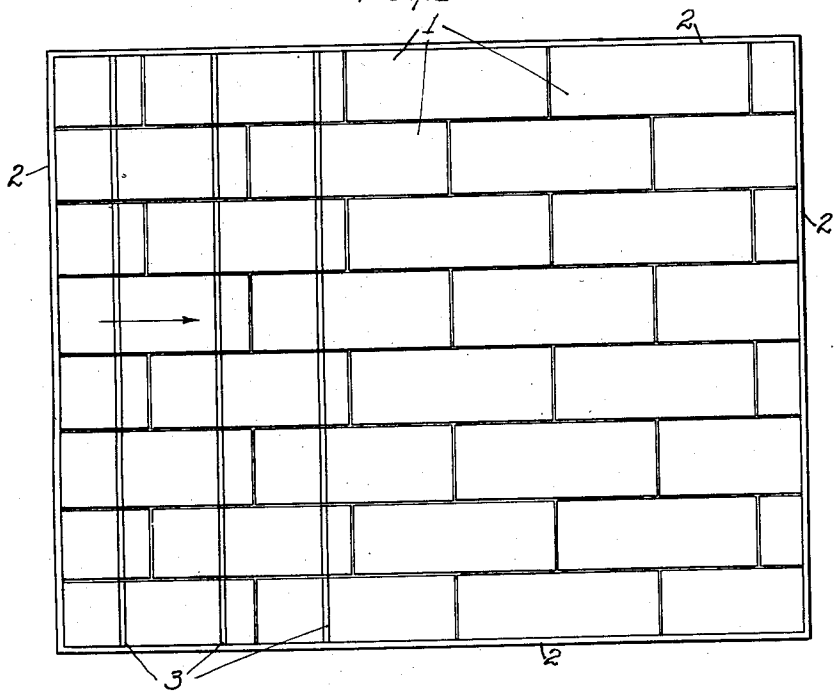


Fig. 2.

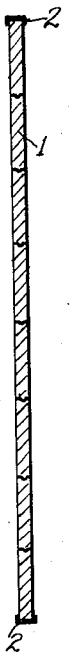
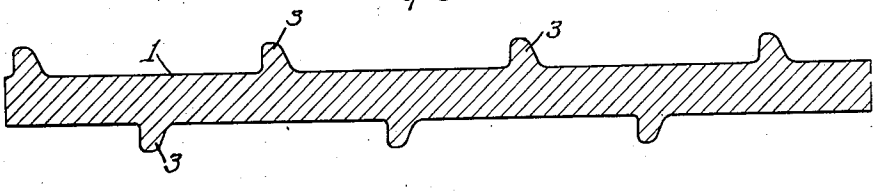


Fig. 3.



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Patented June 9, 1925. 1,541,704

UNITED STATES PATENT OFFICE.

JAKOBUS GIES, OF FRANKFORT-ON-THE-MAIN, GERMANY, ASSIGNOR TO INTERNATIONAL PRECIPITATION COMPANY, OF LOS ANGELES, CALIFORNIA, A CORPORATION OF CALIFORNIA.

SEMICONDUCTING COLLECTING ELECTRODE FOR ELECTRICAL PRECIPITATORS.

Application filed January 8, 1924. Serial No. 685,068.

To all whom it may concern:

Be it known that I, JAKOBUS GIES, citizen of the Republic of Germany, residing at Frankfort-on-the-Main, in the county of Hessen-Nassau and State of Prussia, have invented new and useful Semiconducting Collecting Electrodes for Electrical Precipitators, of which the following is a specification.

The present invention relates to a collecting electrode for electrical gas cleaning apparatus consisting of cement (concrete) or other semi-conductor. According to the invention the electrode consists of several elements or sections without insertions or reinforcements. It has been shown that one can build together in this manner a stable electrode surface or plate of any desired size. The elimination of the insertions (reinforcements) hitherto considered necessary results in an essential simplification and saving.

The collecting electrodes built up of the said section or elements are advantageously loosely supported on an outside frame, that is to say a frame which does not penetrate the interior of the electrode. This loose support of the electrode has the advantage that the electrode can yield to changes in temperature without danger of breakage.

By providing the electrode elements with flange-like projections, transverse to the gas flow which are likewise free from insertions (reinforcements), collecting recesses (catch chambers) are provided according to German Patent No. 277,091, and United States Patent No. 1,362,128, December 14, 1920. These flanges of the electrode sections can without difficulty be placed on one another so that the flanges extend on upwardly uninterruptedly across the electrode surface.

In the drawings the invention is illustrated in two embodiments.

Fig. 1 is a side view and Fig. 2 is a vertical section of the new collecting electrode. Fig. 3 is a cross section on a larger scale through one of the new electrode elements provided with flanges.

As will appear from the drawings the collecting electrode, illustrated as in the example given as a plate, consists of a series of plate sections 1 formed of cement (concrete) or other semi-conductor. These plate sections 1 are free from any internal reinforcement (as shown in the longitudinal section Fig. 2) and are held together by cementing or otherwise. The joints for the plate sections are advantageously formed as of tongue and groove construction.

The electrode plate built up of such plate sections lies in an outer frame 2. The frame 2 is only in loose connection with the plate so that the plate can expand or contract freely under the influence of temperature changes. The outer frame is advantageously made of a material which has the same or similar temperature coefficient as that of the material of the plate.

The plate sections 1 of the collecting electrode can, as shown on the left of Fig. 1 and in section in Fig. 3 be provided with flange-like outward projections 3 on one or both sides thereof. By means of these projections collecting chambers are formed according to the principal of German Patent No. 277,091. The joints of the plate sections are in staggered relation so as to break joint but the flanges 3 of the plate sections are so arranged that on an assembled plate 1, uninterrupted flanges are provided running entirely across the plate transverse to the direction of the gas stream indicated by the arrow.

The term cement or concrete as herein used is intended to include any cementitious molded material, particularly a composition of Portland cement, sand, and crushed aggregate (broken rock or gravel) mixed with water and molded in usual manner and allowed to set or harden. The composition of the concrete or cement may however be varied to produce the desired conditions of semi-conductivity and of strength.

What I claim is:

1. A collecting electrode for electrical precipitators consisting of a plurality of sections, each section consisting wholly of molded semi-conducting material in the form of a plate section and said sections being supported in contact with one another.

2. A collecting electrode for electrical precipitators consisting of a frame and a plurality of molded plate sections supported in said frame, each plate section consisting wholly of semi-conducting material.

3. A construction as set forth in claim 2 in which said plate sections are cemented together.

4. A construction as set forth in claim 2 in which said plate sections are cemented together and are connected by tongue and groove joints.

5. A construction as set forth in claim 2 in which the joints of said plate sections are in staggered relation and said plate sections are provided with flange-like projections which align on adjacent sections to give an uninterrupted flange projection on the collecting electrode.

In testimony whereof I have hereunto subscribed my name this 10th day of December, 1923.

JAKOBUS GIES.

Witnesses:
C. C. L. B. WYLES,
ERIKA JARGER.