

1,345,790.

L. LODGE,

ELECTRICAL DEPOSITION OF PARTICLES FROM GASES.

APPLICATION FILED MAY 10, 1920.

Patented July 6, 1920.

4 SHEETS—SHEET 1.

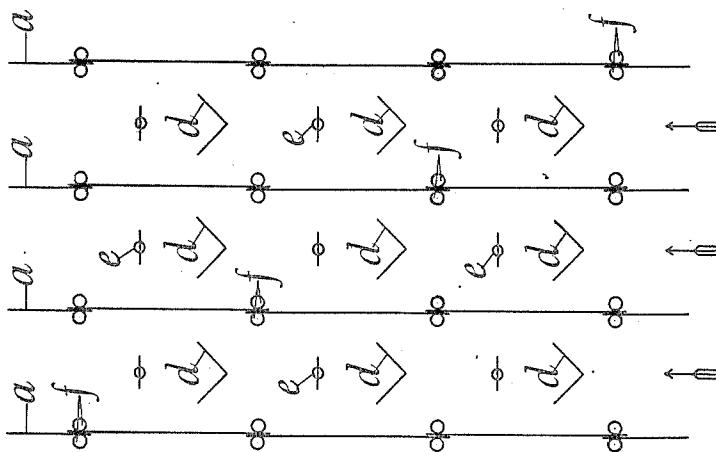


Fig. 2

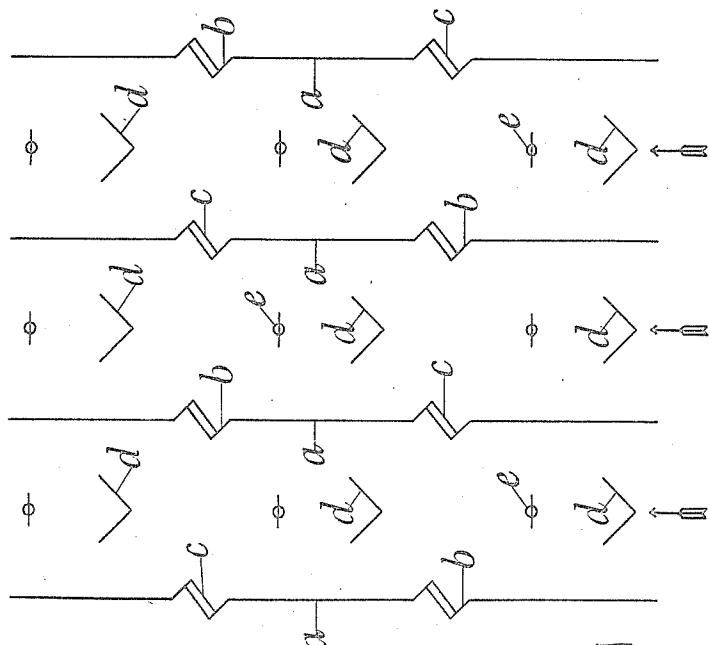


Fig. 1

Inventor
L. Lodge,
By W. R. Kerslake
Attorney

L. LODGE.

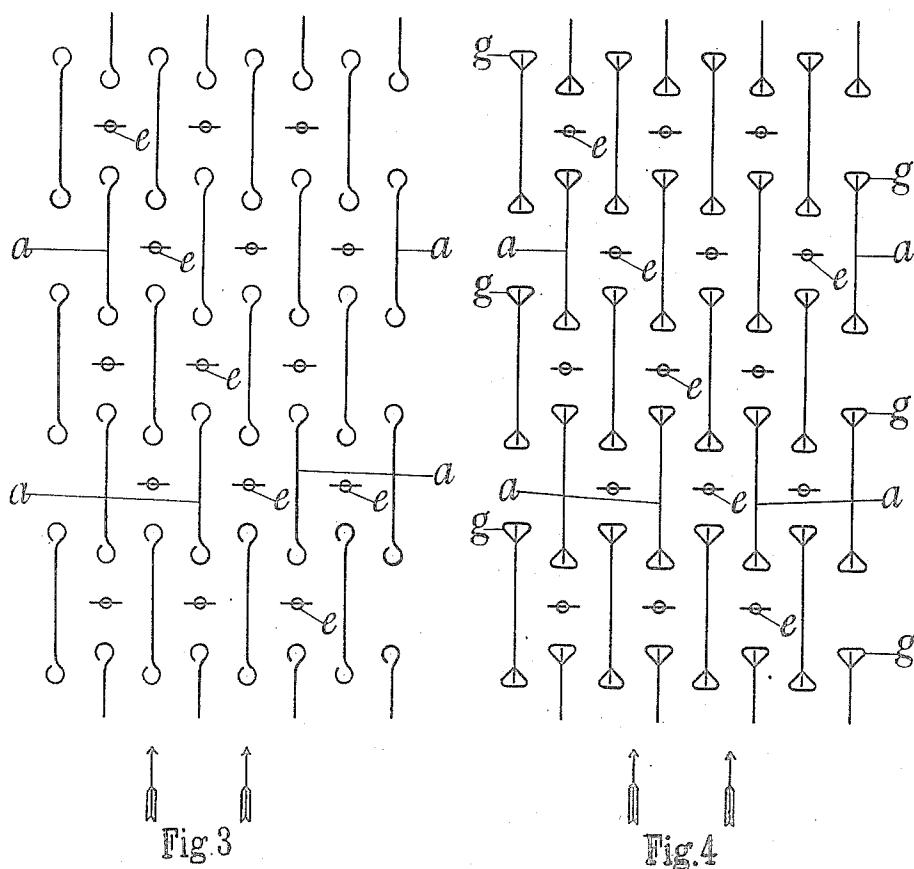
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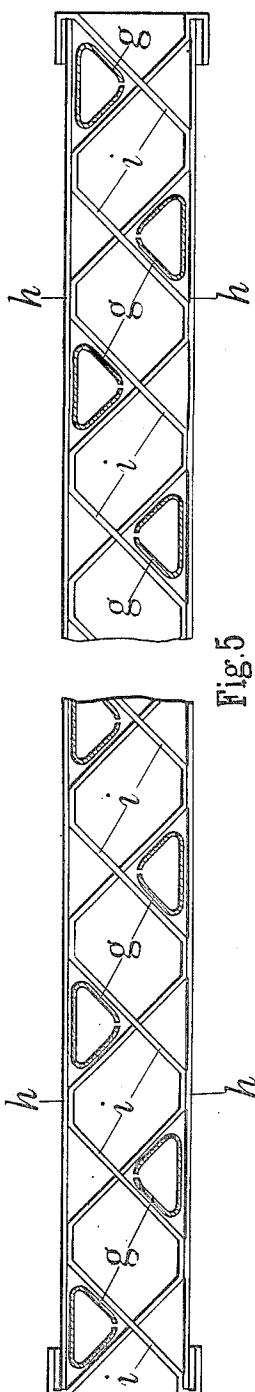


Fig. 5

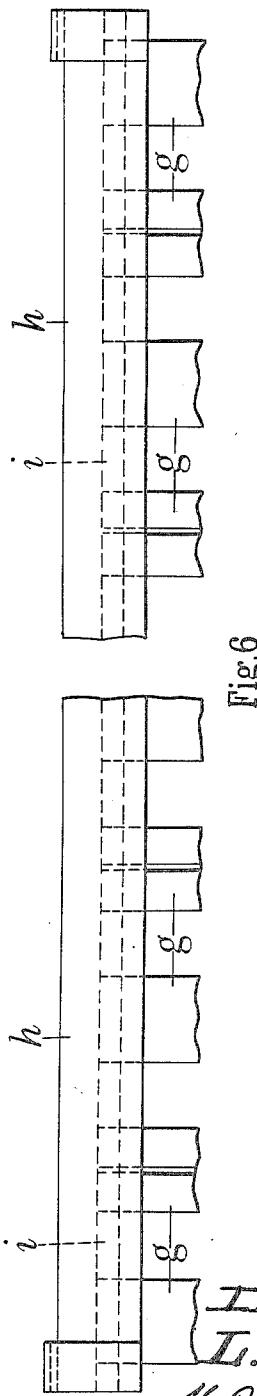


Fig. 6

Inventor
L. Lodge,
By K. R. Kerslake
Attorney

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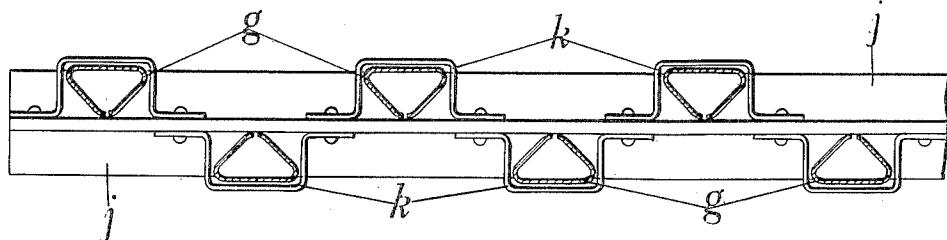


Fig. 7

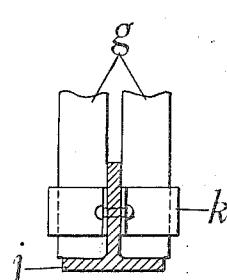


Fig. 8

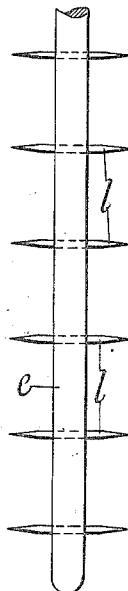


Fig. 9

Inventor
L. Lodge,
By H. R. Kerslake
Attorney

UNITED STATES PATENT OFFICE.

LIONEL LODGE, OF BIRMINGHAM, ENGLAND, ASSIGNOR TO THE LODGE FUME COMPANY, LIMITED, OF BIRMINGHAM, ENGLAND.

ELECTRICAL DEPOSITION OF PARTICLES FROM GASES.

1,345,790.

Specification of Letters Patent.

Patented July 6, 1920.

Application filed May 10, 1920. Serial No. 380,340.

To all whom it may concern:

Be it known that I, LIONEL LODGE, a subject of the King of Great Britain and Ireland, residing at Great Charles street, in the city of Birmingham, England, have invented certain new and useful Improvements Relating to the Electrical Deposition of Particles from Gases, of which the following is a specification.

This invention relates to the electrical deposition of solid or liquid particles from gases, and has for its object to construct improved depositing chambers of the type in which discharge electrodes are arranged between parallel metal plates.

Referring to the accompanying sheets of explanatory drawings:—

Figures 1 to 4 illustrate diagrammatically in plan portions of four different funie deposit chambers constructed in accordance with this invention.

Figs. 5 and 6 are respectively plan and side elevation showing means for supporting the upper ends of the tubes used in the structure shown in Fig. 4, and Figs. 7 and 8 are plan and cross section of means for supporting the lower ends of the said tubes.

Fig. 9 is a diagrammatic side elevation of one of the discharging electrodes.

Referring to Fig. 1, the channels along which the gases flow are constructed from plates *a*. Instead of forming the walls of each channel from continuous plates, each wall is preferably constructed from a number of narrow plates *a*, having their adjacent edges bent as indicated at *b*, and intervening bars or rods *c*. The surface of the walls is thus broken or interrupted by a number of vertical ridges which assist in arresting the particles carried by the gases. Between the walls are arranged vertical deflectors *d* made from angle iron, and between the deflectors *d* are arranged the discharge electrodes *e*. The members *d* serve to deflect the gases toward the sides of the channels when passing the electrodes, and thus both diminish the tendency of the particles to accumulate on the electrodes and facilitate the deposition of the particles on the sides of the channels.

Referring to Fig. 2, the walls of the channels are formed from plates *a* which overlap at their adjacent edges, and the said edges are supported between pairs of vertical

tubes *f*. Between the walls are arranged deflectors *d* and discharge electrodes *e* as described in connection with Fig. 1.

Referring to Fig. 3, the gas channels are formed by vertical plates *a* spaced at suitable distances apart and with the plates of one row opposite the spaces of the adjacent rows. The electrodes *e* are situated in the spaces between the adjacent edges of the plates. Each plate is beaded or bent over into a cylindrical or open tubular form along each vertical edge. In this construction the plates perform the double function of forming the walls of the channels and serving as the deflectors for shielding the electrodes. By means of the beaded edges the gases are deflected laterally away from the electrodes, and such edges provide also the ridges for arresting the particles.

The construction shown in Fig. 4 is essentially the same as that illustrated by Fig. 3, but instead of beading the edges of the plates the edges of the latter are inclosed by open-jointed tubes *g* of triangular or other section, the edges of the plates being slipped into the slots formed by the open joints of the tubes.

In all cases the various plates and other members are supported at their upper and lower ends by means which permit free expansive movements. For example the members *a* and *g* of the structure shown in Fig. 4 are supported by means such as those shown in Figs. 5 to 8. At their upper ends each transverse row of tubes *g* is supported by a lattice bar, Figs. 5 and 6, formed by a channel bar *h* containing bent strips *i*. The spaces formed by the said strips *i* receive the upper ends of the tubes *g* which project above the plates. The ends of the channel bar are supported in any convenient manner. At their lower ends the tubes rest on the flanges of a transverse bar *j* (Figs. 7 and 8) and are retained in the proper positions by clips *k*. The lower ends of the plates rest on the upper edge of the web of the bar.

The electrodes are separately carried on insulating supports and high tension current is supplied to the electrodes by any convenient means. As shown in Fig. 9, each electrode is preferably constructed from a vertical tube *e* having discharge points *l* provided thereon.

Any convenient provision may be made for vibrating the plates and shaking down the accumulated deposits.

Having thus described my invention 5 what I claim as new and desire to secure by Letters Patent is:—

1. In chambers for use in the electrical deposition of particles from gases, the combination comprising plates forming channels for the gases, discharge electrodes situated transversely and longitudinally between the plates, and deflectors for deflecting the gases toward the sides of the channels when passing longitudinally by the discharge electrodes, substantially as described.

2. In chambers for use in the electrical deposition of particles from gases, the combination comprising plates forming channels for the gases, discharge electrodes situated between the plates, deflectors for deflecting the gases toward the sides of the channels when passing the electrodes, and vertical ridges on the sides of the channels, substantially as described.

3. In chambers for use in the electrical deposition of particles from gases, the combination comprising vertical plates arranged in rows with spaces between their adjacent edges, and with the plates in each row opposite the spaces in the adjacent

rows, discharge electrodes situated within the said spaces, and deflectors on the edges of the plates adjacent the electrodes, substantially as described.

4. In chambers for use in the electrical deposition of particles from gases, the combination comprising vertical plates arranged in rows with spaces between their adjacent edges and with the plates in each row opposite the spaces in the adjacent rows, discharge electrodes situated in the said spaces, and separate tubular deflectors on the edges of the plates adjacent the electrodes, substantially as described.

5. In chambers for use in the electrical deposition of particles from gases, the combination comprising vertical plates arranged in rows with spaces between their adjacent edges and with the plates in each row opposite the spaces in the adjacent row, discharge electrodes situated in the said spaces, separate tubular deflectors on the edges of the plates adjacent the electrodes, a flanged support for the lower ends of the plates and deflectors, and a lattice like support for the upper ends of the deflectors, substantially as described.

In testimony whereof I have signed my name to this specification.

LIONEL LODGE.