

H. PAULING.
 APPARATUS FOR PRODUCING ELECTRIC DISCHARGES.
 APPLICATION FILED DEC. 18, 1905.

939,441.

Patented Nov. 9, 1909.

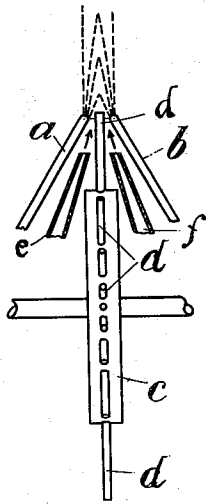


Fig. 1

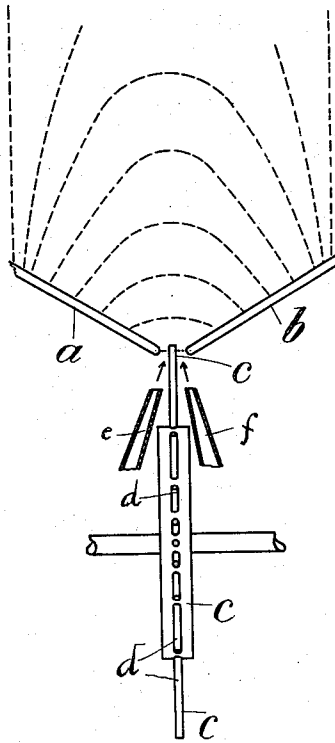


Fig. 2

Witnesses:
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APPARATUS FOR PRODUCING ELECTRIC DISCHARGES.

939,441.

Specification of Letters Patent.

Patented Nov. 9, 1909.

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To all whom it may concern:

Be it known that I, HARRY PAULING, mining engineer, a subject of the German Emperor, and resident of 84 Wilhelmstrasse, in Gelsenkirchen, in the Kingdom of Prussia, German Empire, have invented certain new and useful Improvements in Apparatus for Producing Electric Discharges, of which the following is a specification.

10 This invention relates to the production of electric discharges between stationary electrodes whose points are placed at such a large distance apart that self-ignition is impossible, and it consists, in substance, in
15 successively passing a conductor of electricity through the space between the electrodes, which for a certain space of time enables the energy supplied to such electrodes to jump the space between their
20 points, when this connection is again broken by the conductor leaving the space between the electrodes. The invention will be useful, for example, in connection with the application of such discharges to the treatment of
25 air or analogous gaseous mixtures, such as has been proposed for producing nitric acid therefrom. With regard to processes of this nature it has been found desirable to produce the electrical discharges by as low a
30 current strength as possible, because currents of high strength tend to effect short-circuiting between the electrodes. Further, it has been ascertained by experiment that arcs of great lengths are most adapted for
35 the purpose of these processes. Arcs of great lengths, however, necessitate a correspondingly large distance apart of the points of the electrodes, and hence the use of currents of a low strength was impossible.
40 This invention, however, enables the use of a comparatively low current strength while permitting of a comparatively large distance of the electrodes, so as to avoid short-circuits and at the same time enable the production of arcs of great lengths. For the
45 better comprehension of the invention a practical application thereof to the treatment of a gaseous mixture of this kind will be described hereafter, reference being had
50 to the accompanying drawing in which—

Figure 1 is a diagrammatical view of an apparatus according to this invention, and Fig. 2 is a like view of a slight modification.

Like letters of reference indicate corresponding parts in both figures.

a, b are the stationary electrodes, and *c* is a revoluble disk which carries a number of conductors *d* on its circumference. The conductors *d* are made as studs or pins projecting from the disk *c*, and the length of them
60 is so calculated that they pass through the space between the electrodes as the disk is set in motion.

e, f are blast pipes arranged to blow each a strong current of the gaseous mixture
65 which is to undergo the action of the discharges, through the space between the electrodes.

The current supplied to the electrodes is not able to jump the space between them, 70 except when any one of the conductors *d* is between them. With the position of the electrodes shown in Fig. 1 the discharges, owing to the action of the current of gas blown through between the electrodes, are
75 caused to assume the shape of elongated arcs such as shown in dotted lines. These arcs after having attained a definite length break and extinguish. The electrodes *a, b* may also be disposed as indicated in Fig. 2. 80
In this case the discharges are forming arcs which propagate along the electrodes, as shown in dotted lines. The length of the arcs thus formed will be greater than in the former case. The number of the discharges
85 produced depends upon the rate at which the disk *c* is moved, and it will be seen that by means of the apparatus described any desired or possible number of discharges may be obtained in a certain space of time. 90

Changes in the form, proportion, size, and the minor details of the apparatus illustrated may be made in effecting this new process, without departing from the nature or sacrificing any advantages thereof. 95

What is claimed is:

Apparatus for producing electric discharges having in combination stationary electrodes with a distance between them large enough to prevent ignition, a conduc- 100

tor successively passing and thereby alternately increasing and decreasing the distance between the said electrodes and blast pipes adapted to extinguish the discharges
5 before short-circuiting between the electrodes may occur, substantially as described and for the purpose set forth.

In witness whereof I have hereunto signed my name this seventh day of August 1905, in the presence of two subscribing witnesses.
HARRY PAULING. 10

Witnesses:

WOLDEMAR HAUPT,
MAX TOBIAS.