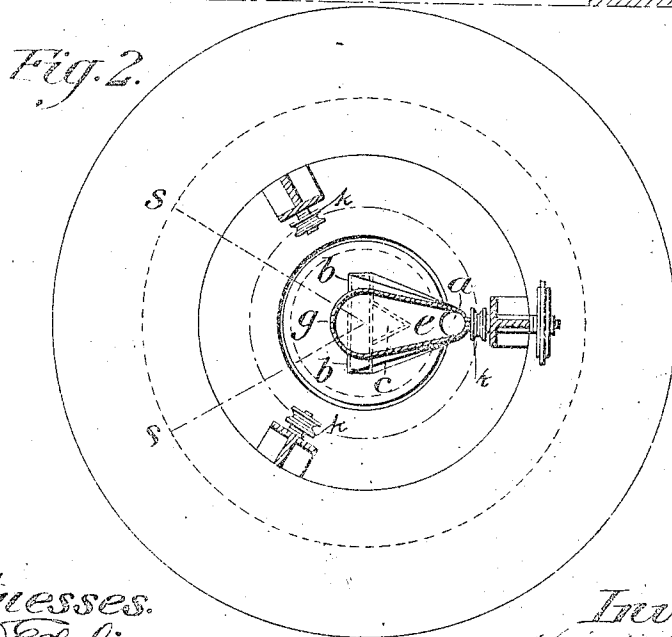
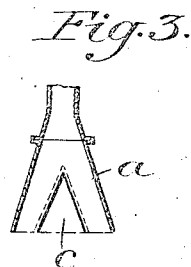


CHARGING DEVICE FOR GAS PRODUCERS AND OTHER FURNACES.

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CHARGING DEVICE FOR GAS-PRODUCERS AND OTHER FURNACES.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, HEINRICH BITTMANN, subject of the Emperor of Austria-Hungary, and residing at 4 Altkönigstrasse, Frankfort-on-the-Main, Germany, have invented certain new and useful Improvements in a Charging Device for Gas-Producers and other Furnaces, of which the following is a specification.

The invention relates to an automatic charging device for gas producers and other furnaces, and has for its object to distribute the charge in uniform layers over the whole section of the furnace. This is obtained by employing an inclined chute or the like, arranged to rotate around a vertical axis, and the lower outflow of which is preferably provided with a suitably shaped outlet. A charging device of this kind allows the material to be conveyed into the furnace in such a manner as to cause it to spread out over the whole furnace section in layers of uniform thickness and in which the grain sizes of the material are uniformly distributed.

In the accompanying drawing, Figure 1 is a longitudinal section, Fig. 2 a horizontal section on line A—A of Fig. 1, and Fig. 3 an elevation of the lower end of the feeding chute.

The special feeding device may have the form of a chute or tube *a* and is sufficiently inclined to allow the material supplied by the hopper *f* to flow freely down through it. The lower outlet *b* of the chute *a* ends near the center of the feed opening of the furnace *S*. The chute bottom is preferably provided at its lower end with an outlet *c*, tapered or otherwise shaped. With a view to closing the furnace to the outer air, the outlet *b* ends upon a covering plate *d* or the like, which covers in an air-tight manner the feed opening of the furnace by immersing the vertical flange thereof in a water tank, or by forming it into a water receptacle, into which the flanged border of the feed opening is immersed.

The feed chute *a* is connected at its upper end to a slightly inclined plate *e* upon which lies the material to be fed into the furnace. A hopper *f* supplies the material to the plate *e* which is provided with a jacket *g* supporting at its upper end a water gutter. The hopper *f* being constantly filled with

material, the furnace is gastight to the outer air. A cylinder *h* surrounding the lower part of the feed hopper *f* and capable of being lowered and raised by means of rods actuated by mandrel and hand wheel controls the quantity of material flowing from the plate *e* into the chute *a*. The whole body formed by the chute *a* with cover plate *d*, and plate *e* with jacket *g* can be rotated by means of a suitable driving device, such as a circular rail *j* supported by and running on V-grooved rollers *k*, one of which is rotated by means of the pulley *p*.

The operation is as follows: During the rotation, the material lying upon the plate *e* is conveyed toward the upper opening of the chute *a*. Owing to the fact that the plate *e* is slightly inclined toward this opening, the material in the hopper *f* is constantly raised and lowered during the rotation as the high part of the plate *e* passes under different parts of the columns of material, thus causing the outflow of the material from the feed hopper toward the chute *a*, any stopping of the material being thereby avoided. From the plate *e* the material flows uniformly into the chute *a*, gliding through its lower opening *b* and through the outlet *c* into the furnace. The outlet *b* and outlet *c* are shaped in such a manner that at all positions of the rotating chute the material is caused to spread in the shape of a sector *s s s* upon the surface of the charge contained in the furnace, uniform layers with respect to thickness and with respect to the distribution of the grain sizes of the material being thus formed upon the charge.

The purpose of the outlet *c* is to avoid an accumulation, at the center, of the finer material falling down more acclivously, and of the coarser material falling down in a more obtuse angle, at the periphery. Another effect of the outlet *c* is to produce a uniform thickness of the layers by causing the material which has the tendency to fall down in a compact stream, to spread out over the whole surface. It is obvious that the shape of the chute outlet and of the outlet *c* depends upon different factors, especially on the density of the material to be fed, the size of the grains and the proportion of their mixture, and must be adapted to each indi-

vidual case by experiments. Preferably the outcut *c* is tapered from its lower end in order to direct the greater part of the material toward the periphery of the furnace. Furthermore the width of the outcut at its lower end is less than the width of the chute bottom, so that one part of the material may glide past the side of the outcut and thus be directed farther toward the periphery of the furnace. The feeding chute preferably has a section enlarged toward its lower end according to the sector shape of the layer spread out upon the charge in the furnace.

What I claim is;

1. In a feeding device for gas producers and other furnaces, the combination with a rotatable inclined chute or channel having its bottom enlarged toward the lower end and opening nearly upon the center of the feed opening of the furnace and also having a tapered outcut at the lower end, and an inclined plate arranged at the upper end of the chute to be rotatable therewith, of means for rotating the chute around the vertical axis of the furnace, said plate being adapted to be loaded with a column of the material to be fed and to discharge the material into the chute during the rotation thereof.

2. In a feeding device for gas producers and other furnaces, the combination with a rotatable inclined chute or channel having its bottom enlarged toward its lower end and opening nearly upon the center of the feed opening of the furnace and also having a tapered outcut at the lower end, an inclined plate arranged at the upper end of the chute to be rotatable therewith, and a feed hopper above said plate, of means for rotating the chute around the vertical axis of the furnace, said plate being adapted to be loaded with a column of the material to be fed and to dis-

charge the material into the chute during the rotation thereof.

3. In a feeding device for gas producers and other furnaces, the combination with an inclined chute or channel having its bottom enlarged toward the lower end and opening nearly upon the center of the feed opening of the furnace and also having a tapered outcut at the lower end, and an inclined plate arranged at the upper end of the chute to be rotatable therewith, said plate being adapted to be loaded with a column of the material to be fed and to discharge the material into the chute during the rotation thereof, and a feed hopper above said plate, of means for rotating the chute around the vertical axis of the furnace, and a cylinder surrounding the lower discharge opening of the hopper and adapted to be lowered and raised.

4. A feeding device for gas producers and other furnaces, consisting of a cover covering the feed opening of the furnace in a gas tight manner, an inclined chute or channel ending nearly at the center of said cover and provided with a tapered outcut at its lower end, a container with a slightly inclined bottom plate connected with said chute, a hopper arranged above said container, a movable cylinder surrounding the lower discharge end of the hopper, and a gas tight connection between the cylinder and the container.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

HEINRICH BITTMANN.

Witnesses:

JEAN GRUND,
CARL GRUND.