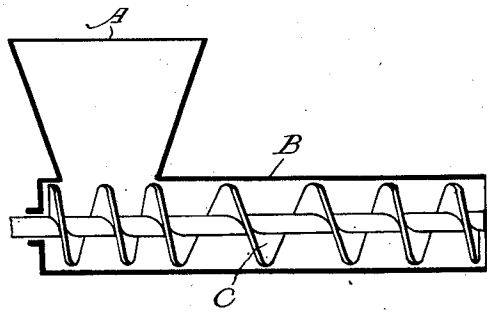
April 6, 1926. 1,579,970

F. THARALDSEN

DEVICE FOR CHARGING METALLURGICAL AND LIKE FURNACES

Filed Feb. 9, 1923

Fig. 1.



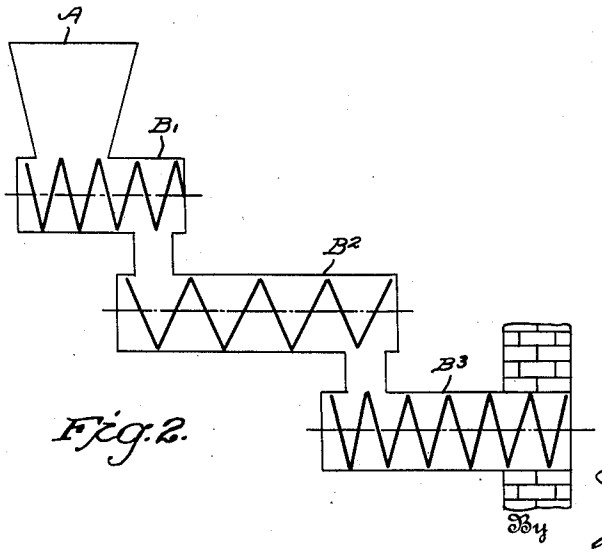


Fig. 2.

Inventor

Filip Tharaldsen

By

Attorney

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UNITED STATES PATENT OFFICE.

FILIP THARALDSEN, OF BESTUN, NEAR CHRISTIANIA, NORWAY.

DEVICE FOR CHARGING METALLURGICAL AND LIKE FURNACES.

Application filed February 9, 1923. Serial No. 618,118.

To all whom it may concern:

Be it known that I, FILIP THARALDSEN, a citizen of Norway, and residing at Bestun, near Christiania, Norway, have invented certain new and useful Improvements in Devices for Charging Metallurgical and like Furnaces, of which the following is a specification.

The present invention relates to devices for feeding materials into metallurgical and like furnaces, more especially to devices of the kind using tubes with feeding screws for the purpose named.

Granulous or powdery charge materials are often fed into the furnace by means of helicoid transport screws. If the charge is to be advanced to a chamber into which the air must not enter, the screw is placed in a tube to the one end of which the material is conveyed from funnels or some other charge devices. The screw has then to transport the charge to the chamber where the materials are to be treated. Devices of this kind can often be used in roasting furnaces and other metallurgical furnaces where it is imperative that the operation takes place without the gas from the furnace chamber being able to escape or without permitting the entrance of air from outside. The feeding screws hitherto used have, however, the considerable inconvenience that the granulous or powdery materials of the charge will pack so firmly in the feeding tube that the movement of the screw is greatly hindered, or the screw is even stopped. If it is tried to force the screw, it will easily break.

These inconveniences are obviated by the present invention which consists in that the screw has not the same pitch of the thread all through the feeding tube, but the pitch is greater further on in the tube than at the beginning and end of it where the charge materials are introduced into and discharged from the feeding tube. In this latter place the charge materials must form a seal against the outside air, and the feeding tube must here be filled with materials. Owing to the greater pitch of the screw further on in the tube the materials will here get a quicker movement, and the feeding tube will thus not be quite filled. The danger of the screw being stopped by packed materials is reduced to a minimum by the fact that it is only in the very few threads of the screw nearest to the charge funnel and the discharge end of the tube that the materials are pressing on the screw.

It is not necessary that the pitch of the screw be increased all through the feeding tube. It is sufficient to make the screw with two sections, a smaller pitch where the materials are received and discharged from the tube and one section with a greater pitch for the rest of the tube.

In any case the screw may of course be constructed in such a way that the pitch increases all through the tube.

In the accompanying drawings, Figure 1 is a diagrammatic longitudinal vertical section of a device embodying my invention.

Fig. 2 is a like view of modified form of the device.

From the charge funnel A the materials are received by the feeding tube B and fill the spaces between the threads of the feeding screw C. Further on in the direction of the movement of the materials these arrive to threads of a greater pitch, and the tube is therefore not quite filled here by the materials.

As shown in Fig. 1 the feeding screw has a less pitch of thread both in the place, where the materials are delivered to the furnace, and at the entrance of the charge materials into the feeding tube, while the intermediate section of the screw has a greater pitch. The feeding tube will then at both ends of it be filled with material. In this way a seal is obtained also in the place where the materials are delivered to the furnace chamber. This arrangement is of importance, when condensable vapours, for instance metal vapours are escaping from the furnace because otherwise such vapours would enter the feeding tube and condense there.

Instead of one tube with a pitch of thread increasing gradually or by steps in the direction of transport, the feeding device may as shown in Fig. 2 consist of two or more tubes, that are passed one after another by the charge materials. In such case the first tube B^1 may receive the material from the charge funnel A and form a seal against the outside air. This tube delivers the materials to a second tube B^2, that conveniently is placed somewhat lower than the first one, and has a screw with a greater pitch. In the second tube the materials are advanced at a quicker rate and consequently the tube

will not be filled with material. The second tube may be followed by a third one B^3, in which the screw may again have a smaller pitch with lower transport capacity, so that a seal is formed against the furnace chamber.

I claim:

1. A feeding device for metallurgical furnaces comprising a casing having a receiving aperture at one end and a discharge aperture at the other end, a screw mechanism in the casing the pitch of the screw-thread being smaller at both ends than the intermediate portion of the screw.

2. A feeding device for metallurgical furnaces comprising a tube having apertures for receiving and discharging the material, a feed screw in the tube having the pitch of its thread smaller where the material is received and delivered than at the intermediate part of the screw.

In witness whereof I affix my signature.

FILIP THARALDSEN.