United States Patent

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[33] **Germany**
[31] **P 17 58 983.2**

[54] **SINTER GRATE**
6 Claims, 1 Drawing Fig.

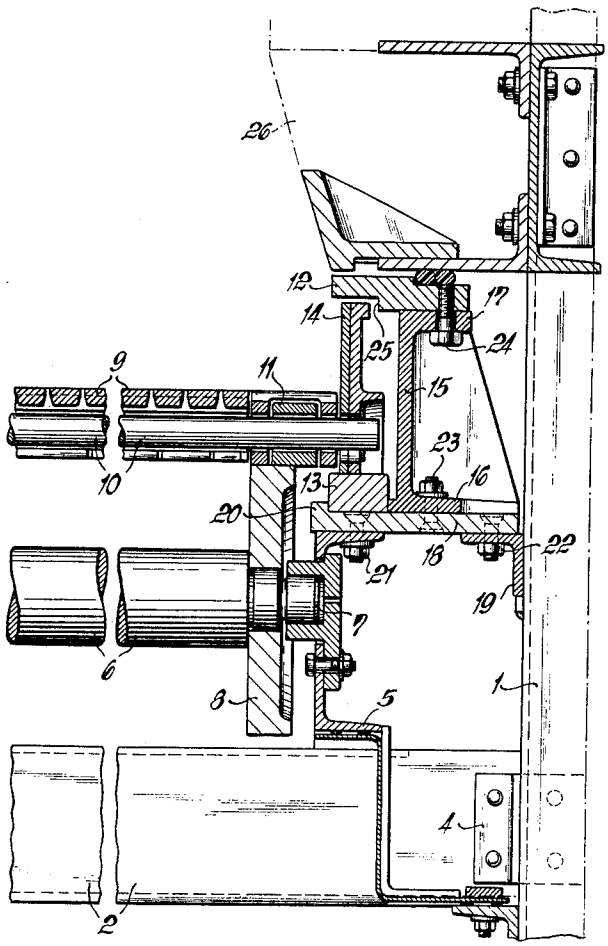
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[50] **Field of Search** 263/28; 266/21; 34/242

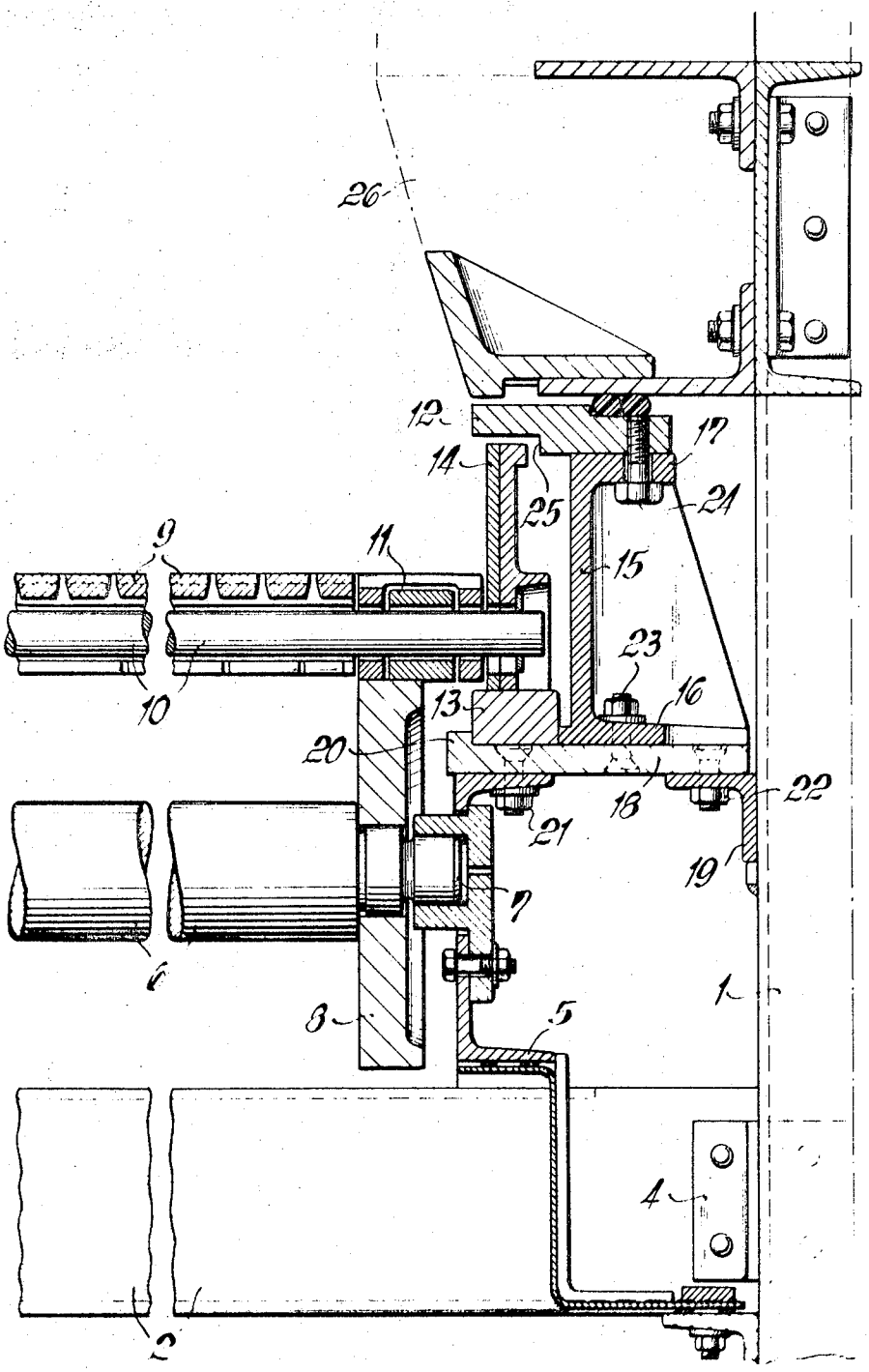
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ABSTRACT: Apparatus for the drying, calcining and sintering of ores, minerals and similar materials. The apparatus is comprised of a grate which is arranged to be drawn by chains, to be supported by bearing rollers and is laterally bounded by sideplates positioned between an upper slide bar and a lower slide bar and mechanically connected to the grate plate, and sealing elements placed between the upper and lower slide bars. The lower slide bars and the sealing elements are arranged to be supported by common supporting plates secured to a supporting frame.




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SINTER GRATE

The present invention relates to an apparatus for the drying, calcining and sintering of ores, minerals or similar materials, for example crude phosphate pellets, the apparatus comprising a grate, which is arranged to be drawn by chains and to be supported by bearing rollers and is laterally bounded by side plates, that are positioned between an upper slide bar and a lower slide bar and mechanically connected to the grate plate, wherein the upper and the lower slide bars have sealing elements placed therebetween.

In a conventional sintering grate of the type described above, the sealing elements are so arranged that the lower end thereof be directly supported by a supporting frame and that the upper end thereof provide support for a slide bar connected to the sealing elements through interposed adapters, which in turn are mechanically connected to the said sealing elements by means of a tongue-and-groove joint. The lower slide bar is arranged so as to rest on a spring-mounted support and to be spaced from the sealing elements. Considerable abrasion of the slide bar which is caused by friction between the lower slide bar itself and the sideplates, makes it necessary for the lower slide bar to be exchanged at certain intervals of time. This exchange has been effected heretofore from inside the sintering grate, which is rather difficult and complicated work bearing in mind that it is necessary for the sealing elements to be disassembled together with the upper slide bar and together with the adapters placed between the said upper slide bar and said sealing elements. The disassembly of these intermeshing structural parts with their considerable weight is even substantially more difficult to carry out than the complicated exchange of the lower slide bar from inside the grate. In addition thereto, the resilient support provided for the lower slide bar is soon rendered useless, i.e. rendered rigid, by dust depositing below the slide bar.

The object of the present invention is to provide a grate for the drying, calcining and sintering of ores, minerals or similar materials, of the type described hereinabove which, however, is free from the deficiencies reported and designed so as to have a readily accessible and readily replaceable lower slide bar. To this effect, the present invention provides for the lower slide bars and the sealing elements to be supported by a supporting plate common to them and secured to a supporting frame. The sintering grate so designed fully satisfies the requirements set forth above and enables more particularly a new slide bar to be readily substituted for a worn lower slide bar. To this end, it is merely necessary first to disassembly the upper slide bar and then the sealing elements as a separate structural part. Following this, the lower slide bar is readily accessible from the outside.

In the sintering grate of the present invention, it is advantageous for the ends of the supporting plates extended to reach behind the slide bars to be angled upwardly. The supporting plates are preferably arranged to be screwed firstly to the supporting frame and secondly to the sealing elements. For the lower slide bar it is sufficient to be loosely supported by the supporting plates and to be held in contact with the angled ends of these plates.

The invention also provides for the lower and upper ends of the sealing elements to be angled away from the grate plate, whereby the angled upper ends provide support for and receive the upper slide bar. The upper slide bar has a ledge secured to it, which is arranged so as to be level with and so as to be spaced from the side plates, and effectively prevents those plates from tilting over.

An exemplary representation of the apparatus of the present invention is shown diagrammatically in the accompanying drawing, which more particularly is a cross-sectional view of a sintering grate used for the drying, calcining and sintering of ores, minerals or similar materials, e.g. crude phosphate pellets.

As can be seen, a holder **2** arranged to be supported by a U-shaped steel or iron section **3** is secured to frame **1** by means of a ledge **4**. Mounted on holder **2** is a support **5** receiving end

7 of shaft **6** and mounted on shaft end **7** is bearing roller **8** carrying grate plate **9**, through chain bolt **10** and chain elements **11**. Grate plate **9** is arranged to be drawn by chain elements **11**.

Grate plate **9** is bounded at its two sides by side plates **14** which are positioned between upper slide bar **12** and lower slide bar **13** and mechanically connected to grate plate **9**. The side plates **14** which are arranged to be driven or drawn by chain elements **11** and bolt **10** slide on lower slide bar **13**. Sealing elements **15** are placed between the upper slide bar **12** and the lower slide bar **13**. The sealing elements **15** have an arm or ledge **16** fastened to their lower ends, and an arm or ledge **17** fastened to their upper ends. The lower slide bar **13** and the lower arms **16** connected to sealing elements **15** are arranged to be supported by plates **18** which are common to them. The plates **18** in turn are supported by holders **5** and **19** forming part of the supporting frame. Supporting plates **18**, i.e., their ends **20** extended to reach behind the lower slide bar **13**, are angled upwardly, and screwed firstly to holders **5** and **19** by means of screws **21** and **22**, and secondly to sealing elements **15** by means of screw **23**. For the lower slide bar **13**, it is sufficient to be loosely supported by supporting plates **18** and to be held in contact with their angled ends **20**. Its own weight and the force exerted by side plates **14** definitely prevent slide bar **13** from leaving its position.

The upper slide bar **12** is arranged to be screwed to the upper arm **17** of sealing elements **15** by means of screw **24**. To prevent sideplates **14** from tilting over, the upper slide bar **12** has a ledge or shoulder **25** which is arranged level with sideplates **14**. Above upper slide bar **12** is the arch above the sintering grate (not shown in the drawing).

The lower slide bar **13** is very easy to replace or exchange in the sintering grate of the present invention. To this end, it is necessary first to unscrew member **24** and remove upper slide bar **12** as a separate structural part. Following this, it is necessary to loose screw **23** for removal of sealing elements **15**. After this easy and rapid work, the lower slide bar **13** is found to be accessible from the outside. Following the exchange of lower slide bar **13**, it is necessary for the sealing elements **15** to be reinstalled and for screw **23** to be tightened. The upper slide bar **12** is positioned and secured to the upper arm **17** of sealing element **15**, by means of screw **24**.

Needless to say the invention is in no way limited to the exemplary represenation shown in the accompanying drawing, and admits of various modifications without departing from its scope.

We claim:

1. An apparatus for the drying, calcining and sintering of ores, minerals and similar materials, e.g. crude phosphate pellets, comprising a grate, arranged to be drawn by grate chains, to be supported by bearing rollers and laterally bounded by sideplates, the sideplates being positioned between an upper slide bar and a lower slide bar and mechanically connected to the grate plate, and sealing elements placed between the upper and lower slide bars, wherein the lower slide bars and the sealing elements are arranged to be supported by supporting plates common to them and secured to a supporting frame.

2. The apparatus as claimed in claim **1**, wherein the supporting plates have upwardly angled ends extended to reach behind the lower slide bars.

3. The apparatus as claimed in claim **1**, wherein the supporting plates are arranged to be screwed firstly to the supporting frame and secondly to the sealing elements.

4. The apparatus as claimed in claim **1**, wherein the lower slide bars are arranged to be loosely supported by the supporting plates and to be held in contact with the angled ends of the supporting plates.

5. The apparatus as claimed in claim **1**, wherein the lower and upper ends of the sealing elements are arranged to be angled away from the grate plate, whereby the angled upper ends provide support for the upper slide bars.

6. The apparatus as claimed in claim **1**, wherein the upper slide bar has a ledge secured to it, the ledge being arranged so as to be level with and so as to be spaced from the sideplates.