

1,057,247.

W. LIERFELD.  
DRYING APPARATUS.  
APPLICATION FILED MAR. 8, 1911.

Patented Mar. 25, 1913.

2 SHEETS—SHEET 1.

Fig. 1.

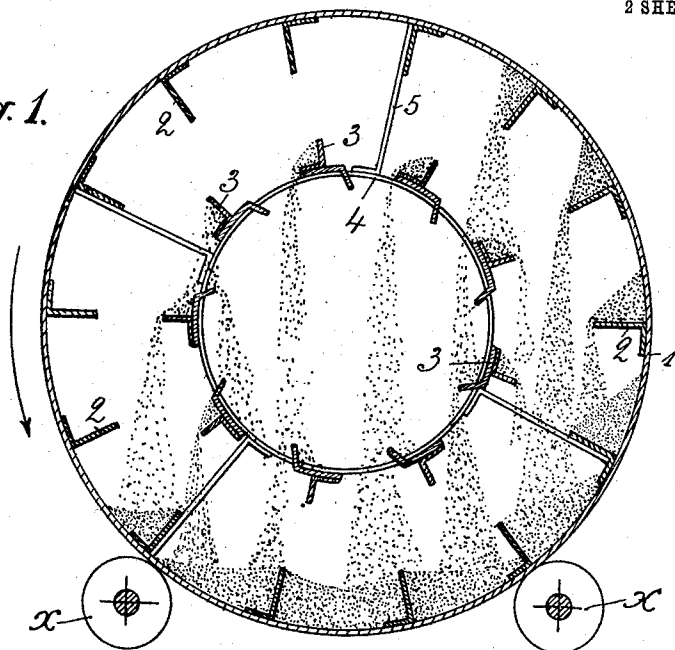
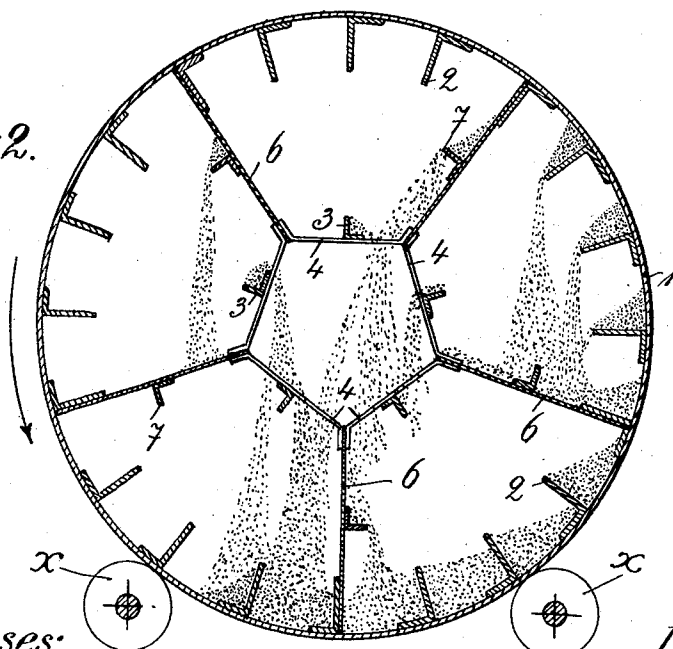


Fig. 2.



Witnesses:

M. Hefling

Everett Lancaster

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Walther Lierfeld

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Attorney.

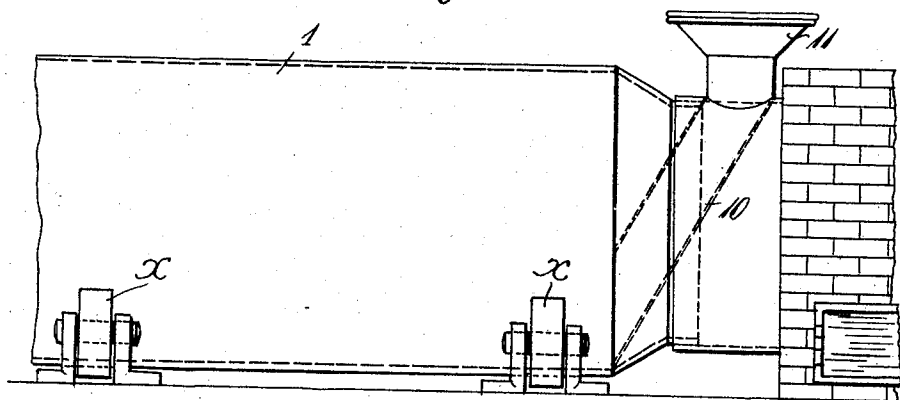
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2 SHEETS—SHEET 2.

*Fig. 3.*



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# UNITED STATES PATENT OFFICE.

WALTHER LIERFELD, OF DORTMUND, GERMANY.

## DRYING APPARATUS.

1,057,247.

Specification of Letters Patent.

Patented Mar. 25, 1913.

Application filed March 8, 1911. Serial No. 613,055.

*To all whom it may concern:*

Be it known that I, WALTHER LIERFELD, manufacturer, a subject of the German Emperor, residing at Dortmund, Kingdom of Prussia, Germany, have invented certain new and useful Improvements in Drying Apparatus, of which the following is a specification.

The present invention relates to an apparatus for drying substances of all kinds and consists therein, that the substances to be dried will not simply fall back into the lower part of the cylinder as it is the case with drying cylinders fitted on the inside with lifting shelves, but will be retained in the middle of the drum, so that the charge raised by the shelves fitted to the cylindrical shell, will be more finely distributed and traverse a longer path through the interior of the cylinder. For the purpose of carrying out this process drying cylinders with lifting shelves fitted to the cylindrical shell are provided with a number of abutment shelves distributed over the section of the cylinder, which abutment shelves will receive the charge falling from the lifting shelves. It is obvious that in consequence thereof the source of heat will be more effectively utilized, as the drying process and at the same time the removal of the dust, if any, will be more rapidly effected.

In the accompanying drawing several constructional forms of drying cylinders for carrying out the present invention are exemplified.

Figure 1 is a cross section through a single shell cylinder. Fig. 2 is a cross section through a single shell cylinder with clear chambers. Fig. 3 is a side elevation of an apparatus embodying my invention.

According to Fig. 1 the drying cylinder 1 is fitted with lifting shelves 2 and is provided with bars 3 extending through the entire length of the cylinder. These bars serve as abutments and conveyers for the charge and are of such a shape, that they will hold the charge alternately on the one and the other side. The bars 3 may be supported say by means of two or more rings 4, which on their part are braced by means of radial stays 5 connected to the shell 1 or the shelves 2 respectively. In order to obtain a larger number of abutment bars and lifting shelves these may be arranged as shown in Fig. 2, where partitions 6 are employed, to

which the bars 7 are secured. Also in this constructional form the bars 3 are coupled by means of braces 4 which on their part are rigidly secured to the partitions.

The devices shown in Figs. 1 and 2 are intended for the class of drying apparatus, as shown in Fig. 3. In these the cylinder 1 rests on rollers  $\alpha$  and has a conical head into which heads the charging hopper 10 arranged close to the source of heat 11 leads. In the drying cylinders hitherto known in which the shelf-bars were provided on the outer shell only the charge could be raised and dropped at the same spot only.

The cylinders shown in the drawing are assumed to have already completed one full rotation.

I claim:

1. A drying apparatus comprising in combination, a revoluble casing provided with a series of peripheral shelves projecting inwardly therefrom, an inner open frame disposed concentrically with respect to said series of shelves, radial supporting members whereby said inner frame is supported from said casing, said frame including abutments projecting toward the center of said frame, and abutments projecting away from said center.

2. A drying apparatus comprising in combination, a revoluble casing provided with a series of peripheral shelves projecting inwardly therefrom, an inner open frame disposed concentrically with respect to said series of shelves, and radial supporting members whereby said inner frame is supported from said casing, said frame including abutments extending away from the center of said casing, substantially as described.

3. A drying apparatus comprising in combination, a revoluble casing provided with a series of peripheral shelves projecting inwardly therefrom, an open frame disposed concentrically with respect to said series of shelves, radial supporting members extending from said inner frame to said casing, said frame including abutments provided with inwardly projecting portions disposed at an angle with respect to the radial, substantially as described.

4. A drying apparatus comprising in combination, a revoluble casing provided with a series of peripheral shelves projecting inwardly therefrom, an inner open frame disposed concentrically with respect to said

series of shelves, radial supporting members whereby said inner frame is supported from said casing, said frame including abutments projecting toward the center of said frame, and abutments projecting away from said center and arranged slightly in advance with respect to said inwardly projecting abutments, with respect to the direction of rotation of said casing.

10 5. A drying apparatus comprising in combination, a revoluble casing provided with a series of peripheral shelves projecting inwardly therefrom, an inner frame disposed within said casing and including abutments

15 projecting toward the center of said casing,

and abutments projecting outwardly from said center.

6. In an apparatus of the character described, a plurality of concentric circular series of angle bars, and means for holding said several series in constant relation to each other, an inner series having open spaces between the members thereof.

In testimony whereof I affix my signature in presence of two witnesses.

WALTHER LIERFELD. [L. S.]

Witnesses:

CHAS. J. WRIGHT,  
ALFRED HENKEL.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."