

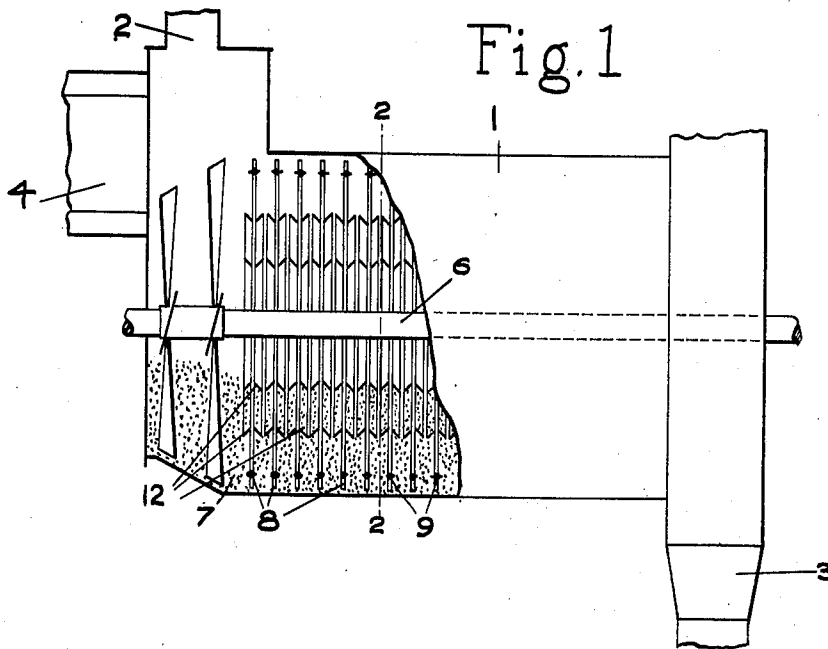
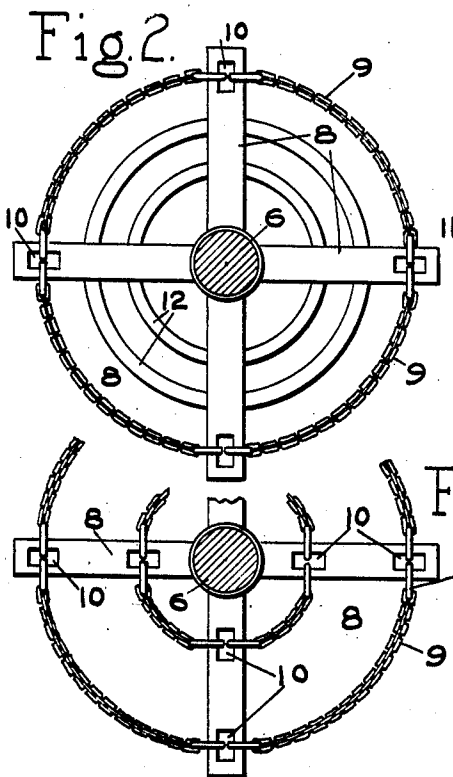
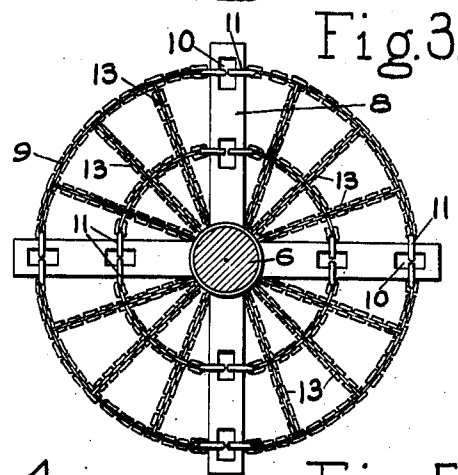
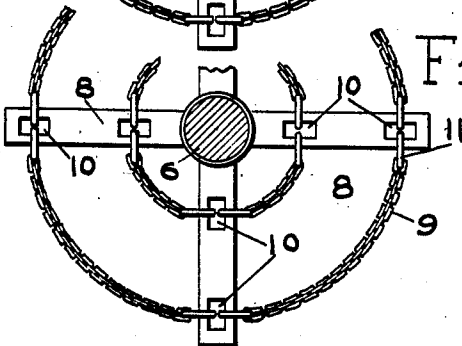
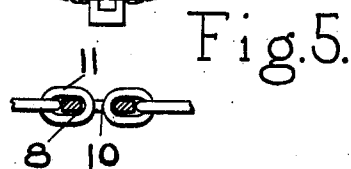
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W. KOBUSCH

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DRYING APPARATUS

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Inventor:
Walter Kobusch
by *Heard Smith & Tennant*
Attys.

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DRYING APPARATUS

Walter Kobusch, Remscheid-Lennep, Germany,
 assignor to Maschinenfabrik Friedrich Haas
 Kommanditgesellschaft, Remscheid - Lennep,
 Germany, a corporation of Germany

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2 Claims. (Cl. 34-7)

This invention relates to drying apparatus for drying loose or granular material, and particularly to drying apparatus of that known type which comprises a casing or drum containing the material to be dried and having provision for the flow of a heating gaseous medium through the drum, and heat transmission bodies or elements mounted on a rotary shaft which extends axially of the drum, the rotation of the shaft causing the heat transmission bodies to pass through the heated gases in the upper part of the casing and thus become heated, and then to pass through the material to be dried which lies on the bottom of the drum whereby such material becomes heated by contact with the heated heat transmission bodies, the latter giving up heat to the material and thus drying it.

In some known driers of this type the heat transmission elements are in the form of perforated disks made fast to the shafts, the perforations providing for the flow of the gaseous heating material through the drum. In other known driers of this type the heat-transferring elements are in the nature of iron rings carried by spokes or arms projecting radially from the shaft. The type of drier having the perforated disk has the disadvantage that the disks form undue resistance to the flow of the heating gases through the drum or casing, thus reducing the efficiency of the drier.

The other form of apparatus wherein the heat transmission bodies are in the form of rings rigidly secured to radial arms or spokes have the disadvantage that because of the rigid connection between the rings and the spokes the material being dried is apt to become wedged or compressed between the rings and the bottom of the casing which results not only in producing undue strains on the bearing for the shaft but also results in unduly pulverizing the material being dried.

It is one of the objects of the present invention to eliminate these defects and this is done by employing flexible heat transmission bodies such, for instance, as chains. Heat transmission bodies in the form of chains have the advantage that because of their flexibility they will move through the material to be dried in the bottom of the drum without causing the material to be wedged between the heat-transmitting bodies and the bottom of the drum or casing, and, therefore, the passage of the flexible heat-transmitting bodies through the material does not pulverize it or subject the bearing for the shaft to undue strain.

In order to give an understanding of the in-

vention I have illustrated in the drawing some selected embodiments thereof which will now be described after which the novel features will be pointed out in the appended claims.

In the drawing;

Fig. 1 is a longitudinal sectional view through a drier embodying my invention;

Fig. 2 is a cross section through the drying apparatus on the line 2-2, Fig. 1;

Fig. 3 is a similar cross section showing a different embodiment of the invention;

Fig. 4 is a similar cross section showing still a different embodiment of the invention;

Fig. 5 is a detailed view showing the manner in which the chain heat transfer elements may be fastened to the spokes.

In the drawing, 1 indicates a drum or casing provided with an inlet opening 2 at one end for the admission of the material to be dried and provided with a discharge opening 3 at the other end for the discharge of the dried material. 4 indicates a conduit or pipe for admitting heated gases to the casing 1, said gases flowing through the casing, and being discharged from the opposite end. 6 is a rotatable shaft extending longitudinally of the casing axially thereof, said shaft carrying the heat-transferring elements which during the rotation of the shaft pass through the upper part of the casing and thus absorb heat from the heated gases, and then pass through the material 7 to be dried which is located in the bottom of the casing thereby transferring the heat to such material.

In accordance with this invention the heat-transferring units or bodies are in the form of chains. As shown in Fig. 4 the shaft 6 has a set of arms or spokes 8 extending radially therefrom and these spokes, which are situated in the same plane, are connected at their outer ends by chains 9. Any number of chains may be used between adjacent spokes and in Fig. 3 there are two chain elements. The chains can be fastened to the spokes in any approved way, and as herein shown each spoke or arm is formed with an opening 10 and the end of the chain is provided with the link 11 which extends through the opening thereby providing a flexible connection between the chain and the spoke. As shown in Fig. 1 there are a plurality of sets of these radial arms 8 with the arms of each set occupying the same plane, and as shown in the drawing, the outer end of each arm of each set is connected by a chain to the outer end of an adjacent arm of said set. In Fig. 2 there is shown an embodiment of the invention wherein the heat-transferring elements

include the chains 9 connecting the outer end of the spokes 8 and one or more iron rings 12 which are secured to the spokes between the chains and the shaft.

- 5 In Fig. 3 an embodiment of the invention is shown similar to that shown in Fig. 4 but which includes also radially extending chains 13 that are attached at their inner ends to the shaft 6 and at the outer ends to the outer chains 9. In 10 the operation of this device the chains become heated as they are carried by the rotation of the shaft through the upper part of the drying chamber, and as the heated chains pass through the material 7 to be dried the heat of the chains is 15 transferred to the material thereby effecting the drying thereof. Because of the flexible formation of the chains they will pass through the material 7 without unduly pulverizing it or without causing it to be wedged against the bottom 20 of the casing.

I claim:

1. A drying apparatus comprising a casing to contain the material to be dried and provided

with means for the passage of heating gases therethrough, a rotary shaft in said casing, a plurality of sets of arms extending radially from said shaft with the arms of each set occupying the same plane, and heat-transmission bodies in the 5 form of chains connecting the outer end of each arm of each set with the outer end of an adjacent arm of said set.

2. A drying apparatus comprising a casing to contain the material to be dried and provided 10 with means for the passage of heating gases therethrough, a rotary shaft in said casing, a plurality of sets of arms extending radially from said shaft with the arms of each set occupying the same plane, heat-transmission bodies in the 15 form of chains connecting the outer end of each arm of each set with the outer end of an adjacent arm of said set, and other chains extending radially from the shaft and having their inner ends connected to the shaft and their outer ends 20 connected to the first mentioned chains.

WALTER KOBUSCH.