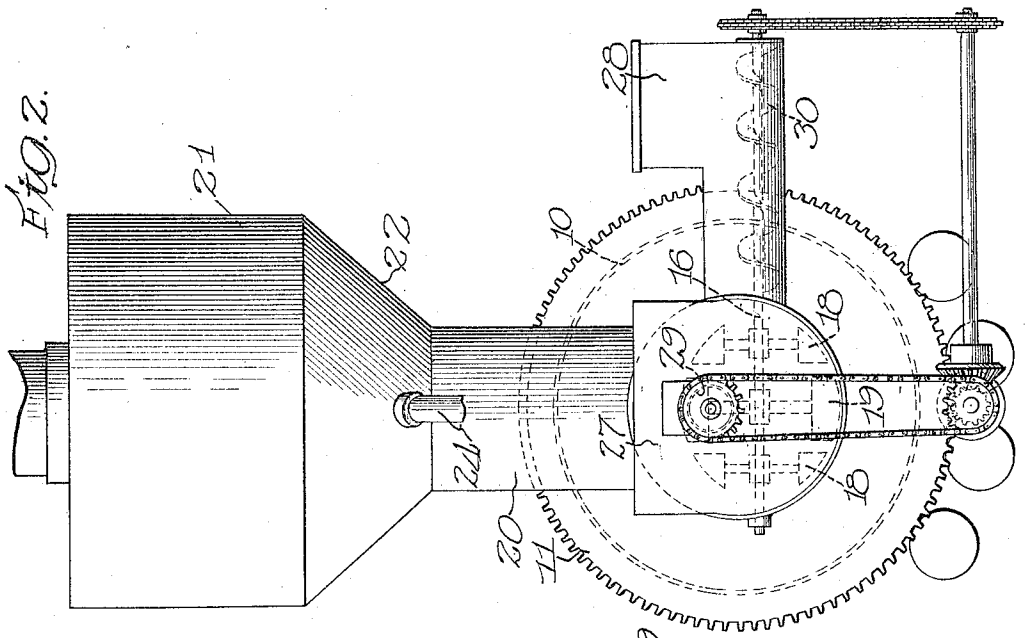
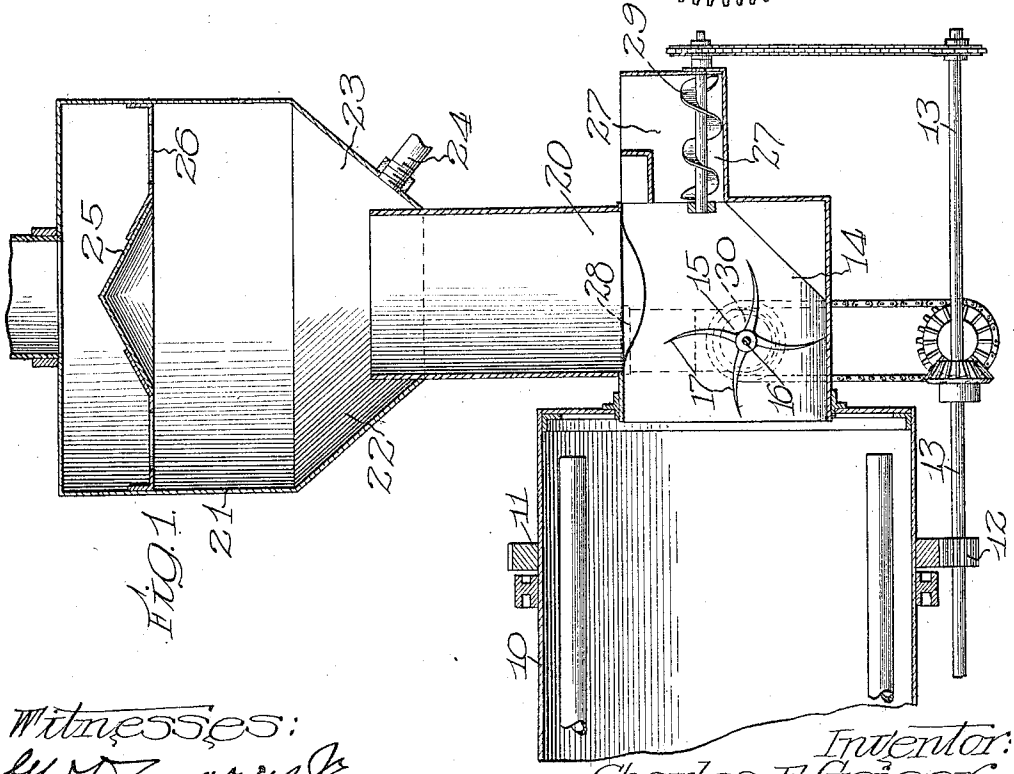
C. E. GEIGER.

FEEDER FOR DRYING MACHINES.

APPLICATION FILED AUG. 30, 1911.

1,139,664. Patented May 18, 1915.





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UNITED STATES PATENT OFFICE.

CHARLES E. GEIGER, OF LOUISVILLE, KENTUCKY, ASSIGNOR OF ONE-THIRD TO WILLIAM E. KOOP AND ONE-THIRD TO G. WALTER FISKE, BOTH OF LOUISVILLE, KENTUCKY.

FEEDER FOR DRYING-MACHINES.

1,139,664. Specification of Letters Patent. Patented May 18, 1915.

Application filed August 30, 1911. Serial No. 646,797.

To all whom it may concern:

Be it known that I, CHARLES E. GEIGER, a citizen of the United States, residing at Louisville, in the county of Jefferson and State of Kentucky, have invented certain new and useful Improvements in Feeders for Drying-Machines, of which the following is a specification.

This invention relates to an apparatus for feeding material to be dried, to a drier, of the type commonly known as a rotary drier, and one of the objects of the invention is to provide an improved, simple and cheap device of the class described, which will be simple in construction and effective and efficient in operation.

Another object of the invention is to provide means to feed material into the drier and to keep the hopper clean without using a conveyer therefor.

A further object of the invention is to provide means whereby the vapors arising from the drier will be permitted to escape to the charging end simultaneously with the charging operation.

A still further object is to provide improved means for collecting and disposing of moisture formed from the vapor which arises from the material to be dried.

For the attainment of these ends, and the accomplishment of other new and useful objects, as will appear, my invention consists in the features of novelty in the construction, combination and arrangement of the several parts generally shown in the accompanying drawing and described in the specification, but more particularly pointed out in the appended claims.

In the accompanying drawing Figure 1 is a cross sectional view showing my invention as applied to the charging end of a rotary drier. Fig. 2 is an end view of the same showing the preferred form of the blades of the charging device in dotted outline.

Some difficulty is experienced in feeding materials such as grains and the like to a drier in such a manner that the vapors arising therefrom may escape to the charging end, and in collecting and disposing of the moisture contained in the vapor as it escapes. In feeding material to be dried it may be desired to mix the materials in certain proportions, and it is not always convenient to measure the materials as they are placed in the mixing hopper. This invention is designed to overcome these difficulties, and to provide a simple, cheap and efficient device of the class described.

Referring now more particularly to the drawing, a portion of a drier 10 of a type commonly known as a rotary drier, is shown, having a topped ring 11 secured thereto, which meshes with the gear 12 and the driving shaft 13. At the end of the drier shown is located the charging device, which comprises a mixing hopper 14, in which is located a charging device 15. This charging device 15 is rotatable about an axis 16 arranged substantially at right angles to the axis of rotation of the drier, and formed with a plurality of blades 17, each of which is preferably composed of separate sections 18 and 19. These sections have their outer portions arranged to form an arc shaped segment or opening therebetween. The bottom of the mixing hopper 14 is preferably rounding in shape, so that the blades 17 approximately fit the curvature thereof, so that material discharged into the mixing hopper is thereafter discharged into the drier by the operation of the charging device 15.

Extending upwardly from the mixing hopper 14 is a vapor stack 20, formed with enlarged portion 21, with a lower beveled portion 22, which extends to the top of the vapor stack 20 and forms a receptacle 23 around the top of the vapor stack. A discharge pipe 24 is connected with the receptacle 23, and is adapted to convey fluid from the said receptacle. In the upper part of the enlarged portion 21 is a deflector plate 25, supported by ribs 26 and extending over the vapor stack 20. This deflector plate or cap 25 is preferably beveled in shape and is adapted to direct moisture formed from the vapor or descending from other parts of the vapor stack from dropping into the vapor stack 20. The moisture as it forms from the vapor on the sides or walls of the vapor stack runs down the sides and is collected in the receptacle 23 about the upper portion of the stack 20, from which it may be discharged in any desired or suitable place. This device in

construction prevents the moisture formed from the vapor from dropping through the vapor stack 20 and into the mixing hopper 14, thereby obviating the continuous vaporization and congealing of the vapor.

Extending from the end of the hopper 14 and communicating therewith is a charging hopper 27 in which a conveyer 27 preferably of the spiral type is rotatable, the latter having driving connection with shaft 13. A charging hopper 28 may also extend from the side of the hopper 14, with a spiral conveyer 30 rotatable therein and preferably situated on the same shaft 16 as the charging device 15. Either one of the charging hoppers may be used alone or omitted, or may be operated simultaneously. In the latter event it is evident that the said hoppers may be employed to feed materials of the same or different kinds to the hopper 14 in any desired or suitable proportions.

Suitable driving means are provided for driving the shaft 16 and the conveyer 29, and it is contemplated that the speeds at which the conveyers are driven may be varied in any desired manner, so that the charging hopper may be supplied with a mixture of any desired proportions. It is evident that the charging hopper may be as large as is desired, but that the rate at which the material therefrom is discharged depends entirely upon the rate at which the conveyer is operated.

It will be seen that the charging device 15 substantially fills the bottom of the hopper 14, so that the rotation of the device keeps the hopper clean. This is accomplished without the use of a conveyer in the hopper, at the same time permitting the escape of vapors at the charging end.

It will be noted that the vapor is permitted to escape through the blades of the charging device 15 in a direction opposite to that in which the material to be dried is supplied to the drier, and that the passage of the vapors is in no way obstructed by the material discharged in the drier.

While I have thus described the preferred construction, combination and arrangement of the several parts which constitute my invention, it is evident that others may make various changes without departing from the spirit and scope of the invention.

Claims:

1. The combination with a drier, of a revoluble blade positively to charge material to be dried within the drier at the end thereof, said blade being formed with spaced sections to permit the egress of vapors between the sections at the same time the said material is discharged into the drier.

2. The combination with a revoluble drier, of charging means therefor, comprising a rotatable member with radial blades each comprising sections spaced apart to permit the escape of vapors when the drier is being charged.

3. The combination with a revoluble drier, of charging means therefor comprising a rotatable member with sectional blades having alined and spaced sections to force the material to be dried into the drier, said member permitting vapors to escape between the sections of said blades.

4. The combination with a revoluble drier, of charging means therefor, comprising a bladed transversely rotatable member, the said blades being formed in separate alined axially spaced sections with interstices therebetween to permit the escape of gases and vapors therethrough simultaneously with the charging of the drier by said means.

5. The combination with a revoluble drier and means for driving the same, of charging means comprising a transversely rotatable bladed member each blade of which is formed with alined sections axially spaced apart to permit the escape of vapors in a direction opposite to the direction of charging, and means to connect the said member with the driving means.

6. The combination with a revoluble drier, of charging means comprising a rotatable member with blades each having spaced sections to permit the escape of vapors in a direction opposite to the direction of, and simultaneously with the charging, and a vapor stack having means to direct moisture away from the drier.

7. The combination with a drier, of charging means therefor, comprising a rotatable bladed member each blade of which has alined sections spaced axially to permit the escape of vapors through the said member, and a vapor stack having a deflector plate to divert moisture from falling in said stack.

8. The combination with a drier, of charging means therefor, comprising a rotatable bladed member each blade of which has alined sections spaced axially to permit the escape of vapors through the said member, a vapor stack having a deflector plate to divert moisture from falling in said stack, and means to collect the moisture formed in the said stack.

9. The combination with a drier, of charging means therefor, comprising a rotatable bladed member formed with interstices to permit the escape of vapors past the said member, a vapor stack having a deflector plate to prevent moisture from falling in said stack, means to collect the moisture formed in said stack, and means to direct the moisture from the stack.

10. The combination with a drier, of charging means therefor, comprising a rotatable bladed member formed with inter-

stices to permit the escape of vapor past the said member, and a vapor stack comprising an upright portion and an enlarged portion joined at the bottom to the upright portion on the line below the top, forming a receptacle for containing fluids, and a deflector plate supported in the larger portion and extending over the top of the other portion, beveled to direct moisture from over the reduced portion of the said stack to fall in said receptacle, and a pipe connected with the receptacle to direct collected moisture away.

11. The combination with a rotatable drier, of charging means therefor, comprising a hopper, a rotatable bladed member in the hopper operative to feed material to be dried to the drier, means to operate the said member in accordance with the movement of the drier, the said bladed member being formed with interstices to permit the escape of vapors at the same time it is operating to feed material to the drier, and means to catch and divert the moisture formed by the escaping vapors.

12. The combination with a rotary drier, of a mixing hopper, a rotatable bladed member formed with spaces between the blades to permit the escape of vapors while the said member is in motion, a vapor stack for the further escape of the vapor to the atmosphere and to collect and divert the moisture whereby it is prevented from falling in the said hopper, and means to convey material to be dried to the hopper.

13. The combination with a rotary drier, of a mixing hopper, a charging device comprising a bladed member rotatably mounted on an axis transverse to the axis of the drier, the blades of the member being formed by sections spaced apart to permit vapor to escape from the drier, a vapor stack, means to catch moisture therein and prevent it from moistening material in the mixing hopper, and conveyers to discharge materials to be dried into the mixing hopper at a predetermined rate.

14. The combination with a rotary drier, of a mixing hopper, a charging device for the drier located in the hopper, comprising a rotatable bladed member with its axis at right angles to the axis of rotation of the drier and having blades made in sections with interstices therebetween to permit vapors from the drier to escape through the charging device simultaneously with charging operation of said device, a vapor stack provided with moisture collecting and disposing means, charging hoppers having communication with the mixing hopper, conveyers arranged in said charging hoppers and means to operate the conveyers at predetermined speeds to charge the mixing hopper with a certain mixture.

15. A drier charging device comprising a mixing hopper, and a bladed device extending transversely across the hopper and comprising a plurality of alined radial sections axially spaced on the same axis and of the same length.

16. A drier feeding device comprising a cylindrical hopper, and a charging device comprising a bladed member with an axis extending transversely of and below the axis of the hopper, the blades being arranged in groups extending radially from said axis, each group comprising separate members axially spaced apart, the outer extremities of which conform to the curvature of the hopper.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, on this 25th day of August, A. D. 1911.

CHARLES E. GEIGER.

Witnesses:

EDWIN HORN,

LESLIE W. EGGERS.

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