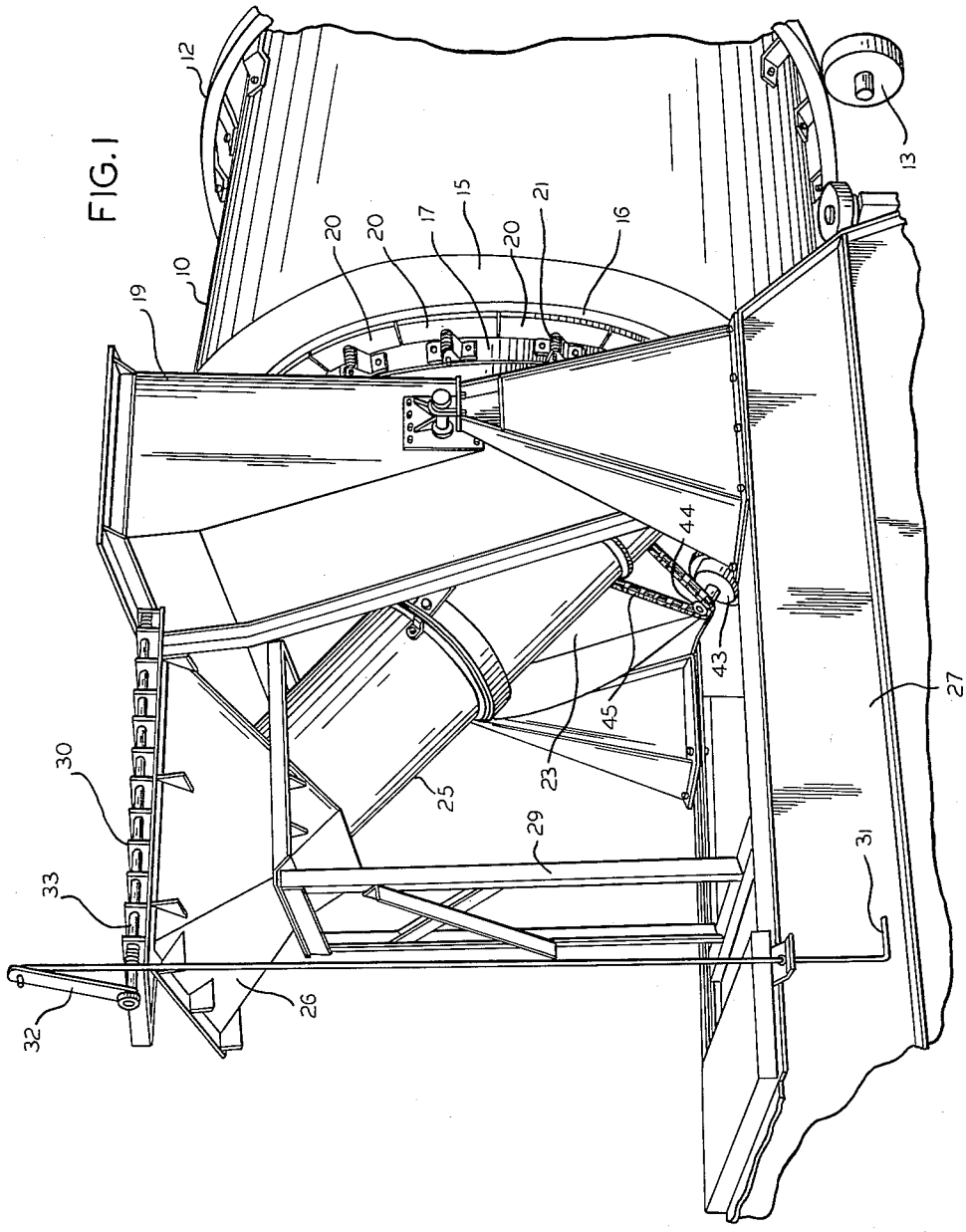
July 10, 1962 R. M. STEIMEL 3,043,019

ROTARY CHARGING CHUTE FOR AGGREGATE FEEDING

Filed April 17, 1959 2 Sheets-Sheet 1

FIG. 1



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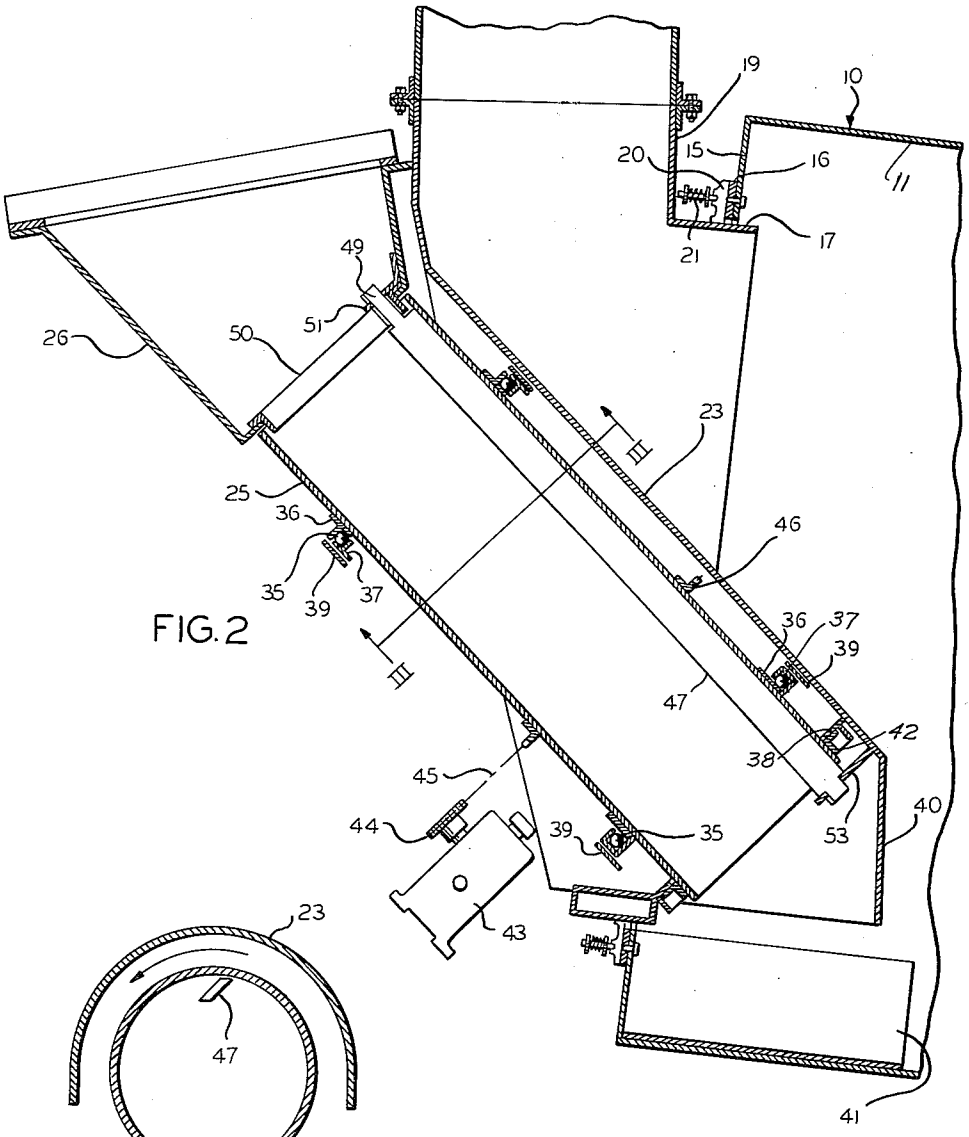


FIG. 2

FIG. 3

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ROTARY CHARGING CHUTE FOR AGGREGATE FEEDING

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5 Claims. (Cl. 34—141)

This invention relates to improvements in rotary drum types of aggregate driers and more particularly to an improved form of charging chute for such driers.

A principal object of the present invention is to provide a feeding or charging mechanism for rotary drum types of driers so constructed and arranged as to reduce the entry of air at the charging end of the drier to a minimum.

A further object of the invention is to provide a feeding mechanism for rotary drum types of aggregate driers in the form of an inclined rotatably driven charging chute leading into the charging end of the drier, and sealed thereto.

A still further object of the invention is to improve upon the aggregate feeding mechanisms of rotary drum types of driers by utilizing an inclined rotatably driven generally cylindrical charging chute leading into the charging end of the drier in which a scraper blade extends along the inner wall of the charging chute for substantially the length thereof to cut away material tending to adhere to the interior of the chute and retard the flow of material to the drier drum.

A still further object of the invention is to improve upon the aggregate charging mechanisms of rotary drum types of driers by utilizing an inclined rotary charging chute entering the drier drum at the charging end thereof adjacent the bottom thereof and along the suction air chute, drawing air through the drier drum, and by sealing and shielding the rotary charging chute to reduce the short circuiting of air through the charging chute to a minimum.

These and other objects of the invention will appear from time to time as the following specification proceeds and with reference to the accompanying drawings wherein:

FIGURE 1 is a fragmentary perspective view of a rotary drum type of aggregate drier, looking at the drier from the charging end thereof;

FIGURE 2 is a fragmentary longitudinal sectional view taken through the drier at the charging end portion thereof; and

FIGURE 3 is a fragmentary sectional view taken substantially along line III—III of FIGURE 2.

In the embodiment of the invention illustrated in the drawings, I have shown in FIGURES 1 and 2 the intake or charging end portion of an aggregate drier including a generally cylindrical rotatable drier drum 10 having an inner cylindrical wall 11. The drier drum is mounted for rotation about an inclined axis, inclined downwardly from the intake or charging end of the drum to the discharge end thereof (not shown) at a relatively flat angle.

The drier drum 10 has longitudinally spaced annular tracks 12 spaced radially from the wall thereof and extending thereabout and rotatably supported on rollers 13 forming a rolling support or cradle for said drier drum, in a manner well known to those skilled in the art so not herein shown or described further. The drum 10 has an annular end wall 15 having a wearing ring 16 extending thereabout along the open end thereof in radially spaced relation with respect to a stationary air plate 17. The stationary air plate 17 affords communication from the interior of the drier drum 10 through a suction duct 19. A suction blower (not shown) draws heated air through the drum from the discharge to the charging end thereof.

The end wall 15 and wearing strip 16 are sealed to the

air plate 17 by means of a segmental annular seal including a plurality of sealing segments 20 rockingly mounted on the air plate 17 to rock in the direction of rotation of the drum and biased into engagement with the wearing plate 16 by springs 21, as shown and described in an application Serial No. 807,066, filed by Harry A. Barber on April 17, 1959, now Patent No. 3,009,260, so not herein shown or described further.

The suction duct 19 as shown in FIGURE 2 has an inwardly recessed generally arcuate or concave wall portion 23 extending within the charging end of the drier drum 10, forming a recess and support for a rotary charging chute 25 extending therealong within the drier drum 10, for charging the drier drum with aggregate and the like.

As shown in FIGURES 1 and 2, the charging chute 25 is cylindrical in form and has a hopper 26 mounted at its upper end, and is supported on a base 27 for the drier, on a supporting frame structure 29, extending vertically from said base. The hopper 26 is shown as having a grate or screen 30 pivotally mounted on the upper end thereof and movable into engagement with the top of said hopper to screen the aggregate as it is dicharged into said hopper. The screen 30 is pivotally lifted by a rod 31 slidably mounted in the base 27 and pivotally connected at its upper end to a rocking arm 32, mounted on a supporting rock shaft 33 for said screen.

Referring now in particular to the rotatable charging chute 25, said charging chute is rotatably mounted on ball bearings 35, mounted in pairs of longitudinally spaced facing races 36 and 37. The races 36 are mounted on and extend about the periphery of the chute 25 while the races 37 are mounted on retainer rings 39, suitably mounted on the recessed wall portion 23, and rotatably mounting the charging chute 25 to extend along the recessed wall portion 23 within the charging end of the drier drum 10, as shown in FIGURE 2. The recessed wall portion 23 terminates into a depending wall or shroud 40 which extends into the drier drum about the discharge end of the rotary charging chute and forms a shroud or air seal, directing the aggregate to the bottom of the drier drum 20 to be conveyed away from the air seal 40 by vanes or flights 41, extending radially inwardly of the inner wall 11 of the drier drum.

A sealing plate structure 38 is mounted in the recessed wall portion 23 and extends about the discharge end of the chute 25, and is abutted by a parallel leg of an angle 42, extending about and secured to the lower end portion of the charging chute 23, to seal the lower end portion of said charging chute.

The charging chute 25 is rotatably driven by a motor 43 driving a sprocket 44 through a speed reducer (not shown), which may be contained within the motor housing in a manner well known to those skilled in the art, so not herein shown or described further. The sprocket 44 meshes with a chain 45 meshing with a sprocket 46 extending about the periphery of the charging chute, and riveted or otherwise secured thereto.

A scraper blade 47 extends within the cylindrical charging chute 25 for substantially the length thereof at an obtuse angle with respect to the wall thereof when rotating in the direction shown in FIGURE 3, to scrape or cut away any material which may tend to adhere to the interior wall of the charging chute and tend to restrict the flow of material into the drier drum. The scraper blade 47 has a reduced upper end portion 49, extending through a flanged sealing collar 50, mounted in the hopper 26 and extending within the receiving end of the charging chute 25. The reduced end portion 49 of the scraper blade 47 extends within an apertured portion of a bracket 51, mounted in the hopper 26 and extending radially inwardly of the sealing collar 50. The lower end of the

scraper blade 47 is also reduced in cross-sectional area and extends through the apertured portion of a bracket plate 53, extending radially inwardly of the inner wall of the recessed portion 23.

It may be seen from the foregoing that an improved form of rotary charging chute for aggregate driers has been provided, in which the discharge end of the charging chute is shrouded to accommodate the aggregate discharged into the rotary drier drum to form an air seal with the shroud and charging chute, and to thereby restrict the entry of air through the charging chute to a minimum.

It may further be seen that since the charging chute is continuously rotating, that any material which would tend to adhere to the interior wall of the charging chute, and otherwise tend to restrict or retard the flow of material through the chute, is removed by the scraper blade 47, to assure the metering of a continuous flow of raw aggregate into the charging end of the drier drum, sealed from the short circuiting of air by the air seal or shroud 40, and to thereby assure the accurate control of the feeding and drying processes.

While I have here shown and described one form which my invention may be embodied, it should be understood that various modifications and variations in the invention may be effected without departing from the spirit and scope of the novel concept thereof, as defined by the claims appended hereto.

I claim as my invention:

1. In a drier for aggregate and the like,

a. a rotary drier drum mounted for rotation about an axis inclined at a flat angle with respect to the horizontal and having

b. An aggregate receiving end at the higher end portion thereof having a generally cylindrical peripheral wall portion,

c. and having an aggregate discharge end at the lower end portion thereof,

d. a suction duct at the aggregate receiving end of said drier drum extending within said drier drum and having

e. an air plate having a generally cylindrical outer surface extending within the cylindrical inlet portion of said drier drum,

f. sealing means sealing said air plate to said drier drum

g. a generally cylindrical inclined charging chute extending along the lower end portion of said suction duct within said drier drum,

h. bearing means journalling said charging chute on said suction duct,

i. means rotatably driving said charging chute,

j. and a shroud within said drier drum extending over and downwardly along the discharge end of said charging chute and spaced in advance thereof and accumulating the aggregate at the discharge end of said charging chute to seal the discharge end of said charging chute by the accumulated aggregate and reduce the short circuiting of air through said charging chute.

2. A rotary type of drier in accordance with claim 9 in which a scraper blade extends along the interior wall of said charging chute and cuts away aggregate from the wall of said charging chute tending to retard the flow along said charging chute.

3. In a drier for aggregate and the like.

a. a cylindrical rotatable drier drum rotatable about an axis inclined at a flat angle with respect to the horizontal and having

b. an aggregate receiving end at the higher end portion thereof having a generally cylindrical inlet wall portion, and having

c. an aggregate discharge end at the lower end portion thereof,

d. an air plate extending within the aggregate receiving end of said drier drum having a cylindrical peripheral wall extending within said inlet wall portion,

g. means sealing said air plate to said inlet end portion of said drier drum,

h. a suction duct leading from said air plate,

i. said suction duct having a recessed inclined wall portion leading within said drier drum,

j. an inclined cylindrical rotary charging chute extending along said recessed inclined wall portion,

k. bearing means mounted in said recessed inclined wall portion, mounting said charging chute to extend along said inclined recessed wall portion into said drier drum,

l. a stationary hopper at the receiving end of said charging chute,

m. a motor,

n. means driven by said motor for rotatably driving said charging chute, and the discharge end of said charging chute being closely adjacent the bottom of said drier drum,

o. and a shroud extending downwardly along the discharge end of said charging chute and about the discharge end portion thereof and accumulating aggregate at the discharge end portion of said charging chute to effect an air seal of aggregate at the discharge end of said charging chute and thereby prevent the short circuiting of air through said charging chute.

4. A rotary drier drum in accordance with claim 3, in which a scraper blade extends longitudinally along the interior wall of said charging chute and cuts away material tending to adhere to the inner wall of said charging chute.

5. In a rotary drum type of drier for aggregate and the like,

a. a drier drum rotatable about an axis inclined at a relatively flat angle with respect to the horizontal and having

b. a receiving end portion at the higher end thereof,

c. a suction duct extending within said receiving end portion of said drier drum and sealed thereto,

d. means charging said drier drum with aggregate and the like comprising,

e. a stationary hopper,

f. an inclined charging chute having an interior cylindrical wall in material receiving relation with respect to said hopper and extending within said drier drum to a position adjacent the bottom thereof,

g. bearing means extending about said charging chute and journalling said charging chute on the outside of said suction duct.

h. means for rotatably driving said charging chute relative to said drier drum,

i. a stationary scraper blade extending longitudinally along the interior wall of said charging chute,

j. and a shroud extending within said drier drum in advance of and about and downwardly along the discharge end of said charging chute and retarding the flow of aggregate to said drier drum and thereby accumulating aggregate at the discharge end of said charging chute to effect an aggregate seal between said charging chute and said drier drum and reduce the short circuiting of air through said chute into said drier drum.

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