

F. FOSTER.
DRIER.

APPLICATION FILED FEB. 8, 1909.

924,051.

Patented June 8, 1909.

Fig 2

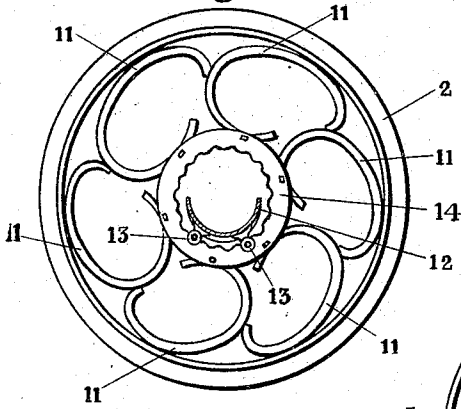


Fig 3

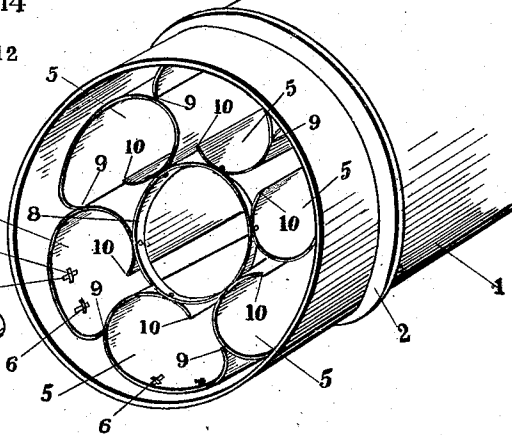


Fig 4

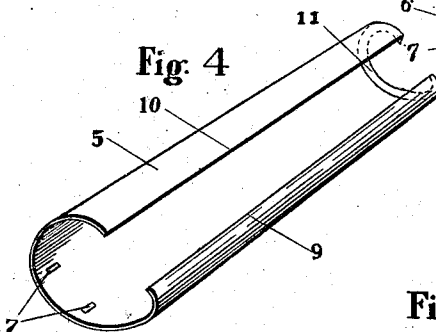
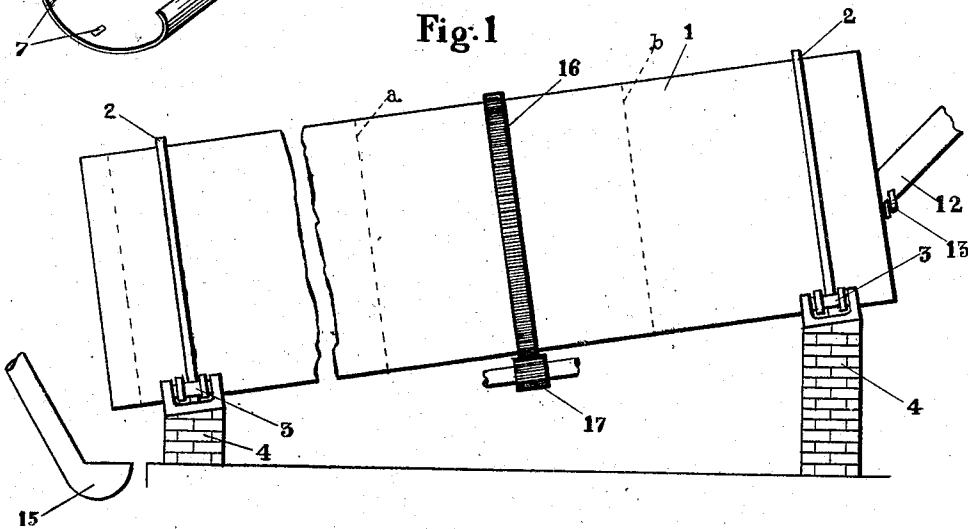


Fig. 1



WITNESSES:

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UNITED STATES PATENT OFFICE.

FRANK FOSTER, OF DETROIT, MICHIGAN.

DRIER.

No. 924,051.

Specification of Letters Patent.

Patented June 8, 1909.

Application filed February 8, 1909. Serial No. 476,690.

To all whom it may concern:

Be it known that I, FRANK FOSTER, a citizen of the United States of America, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Driers, of which the following is a specification, reference being had therein to the accompanying drawings.

In rotary driers for salt, sand, and similar granular or powdered material, of the type wherein the material to be treated is fed into the elevated end of an inclined revolving barrel, and tumbled and rolled along to the lower discharge end, considerable difficulty is encountered in preventing the mass of material clinging together and heaping up on one side of the cylinder. This keeps the inner portion of the mass from properly drying, and likewise concentrates the load at one side so that it throws the cylinder out of balance and thus occasions the use of greater driving power than would otherwise be needed.

This invention relates to a drier for salt and like granular material, and more especially to means therein for insuring even treatment of the material to be dried and a distribution thereof around the drier which keeps the latter in balance and thus greatly reduces the power necessary to drive it.

In the drawings, Figure 1 is a view in side elevation of a drier embodying features of the invention. Fig. 2 is a view of the receiving end of the drier showing a feed hopper and means for agitating it. Fig. 3 is a view in perspective of the discharge end of the drier. Fig. 4 is a view in detail of a distributing plate.

Referring to the drawings, a cylindrical shell or barrel 1, open at both ends, of sheet metal, metal lined with wood, wood or like suitable material, has circumferential track hoops 2 near each end which travel on grooved or flanged rollers 3 suitably journaled in bearing blocks on pedestals 4, the latter being arranged to hold the barrel in a slightly inclined position. Distributing plates 5, bent between their lateral edges into substantially elliptical form with their proximate margins in parallel relation, are detachably secured around the inner periphery of the barrel in contiguity by any suitable means, as, for example, thumb screws 6 or the like engaging slots 7 in said

plates and spacing hoops 8 or spreaders inserted centrally between the plates at proper intervals. One of the margins 9 of each plate is adapted to closely bear against the adjacent plate while the other margin 10 laps by and curls up sufficiently to prevent material in the plate from escaping between the said margins when the sheet is inverted or reaches its highest position during each revolution of the barrel. The ends of the distributing sheets at the upper receiving end of the barrel have inner flanges 11 while the lower ends are rimless. The sheets extend in line from one end of the barrel to the other but are preferably divided transversely at *a* and *b*, into sections, which facilitates their removal for cleansing purposes or repairing. A feed spout 12 of suitable shape is supported on bearing rolls 13 on its under side near its mouth which ride on the periphery of that spacing ring 14 or spreader which is at the upper receiving end of the barrel. This inner periphery is notched, fluted or sinuous, and thereby shakes and rocks the spout 12 and thus assists in feeding its contents into the barrel. A hopper 15 at the lower end for receiving the material from the barrel, and means for rotating the barrel, as, for example, a circular rack or gear 16 and driving pinion 17, complete one form of the apparatus.

In operation, the feed spout 12, agitated by the rocking of the supporting casters on the corrugated ring discharges between the plates so that the salt or like material falls between the intumed margins of the distributing plates in each of which a portion is trapped and rolled over and over therein down the length of the barrel. The peculiar shape of the distributing plates tumbles the load in each on itself in such manner that all portions are evenly exposed to the air, while the entire load in the barrel is evenly distributed around the periphery so that the barrel is balanced and it takes but little power to rotate it.

The apparatus is effective, easily assembled or taken down for repairs or cleaning, and the distributing plates may be placed in any drier of this type, as they are readily placed therein after the ordinary form of tumblers and conveyers is removed.

Obviously, changes in the details of construction may be made without departing

from the spirit of the invention, and I do not care to limit myself to any particular form or arrangement of parts.

What I claim as my invention is:—

- 5 1. A drier comprising an obliquely disposed rotatable barrel, distributing members extending from end to end thereof consisting of sheets bent between their margins and secured in juxtaposition around the interior of
10 the barrel with their inturned, slightly separated margins toward the barrel center, and means for feeding granular material into the distributors at one end of the barrel.
- 15 2. A drier comprising an obliquely disposed rotatable barrel, distributing member extending from end to end thereof consisting of sheets bent between their margins and secured in juxtaposition around the interior of
20 the barrel with their inturned, slightly separated margins toward the barrel center, means for detachably securing the distributing members in place, and means for feeding granular material into the distributors at one end of the barrel.
- 25 3. A drier comprising an obliquely disposed rotatable barrel, means for rotating the barrel, distributing members extending from end to end thereof consisting of sheets bent between their margins and secured in
30 juxtaposition around the interior of the barrel with their inturned, slightly separated margins toward the barrel center, means for detachably securing the distributing members in place, and means for feeding granular
35 material into the distributors at one end of the barrel.
- 40 4. A drier comprising an obliquely disposed rotatable barrel, means for rotating the barrel, distributing members extending from end to end thereof consisting of sheets bent between their margins and secured in juxtaposition around the interior of the barrel with their inturned, slightly separated
45 margins toward the barrel center, spacing rings concentric with the barrel bearing outwardly against the shells, and means for feeding granular material into the distributors at one end of the barrel.
5. A drier comprising an obliquely dis-

posed rotatable barrel, distributing members 50 extending from end to end thereof consisting of sheets bent between their margins and secured in juxtaposition around the interior of the barrel with their inturned, slightly separated margins toward the barrel center, 55 spacing rings concentric with the barrel bearing outwardly against the sheets, a feed spout discharging into one end of the barrel into the distributors, and means in the barrel for agitating the spout. 60

6. A drier comprising an obliquely disposed rotatable barrel, distributing members extending from end to end thereof consisting of sheets bent between their margins and secured in juxtaposition around the interior of 65 the barrel with their inturned, slightly separated margins toward the barrel center, spacing rings concentric with the barrel bearing outwardly against the sheets, a feed spout discharging into one end of the barrel 70 into the distributors, bearing rollers on the spout, and a spacing ring at the proximate end of the barrel having a sinuous inner edge on which the spout rollers ride.

7. A drier comprising an obliquely dis- 75 posed, open ended barrel, having outer circumferential track hoops, bearing rollers on which the hoops ride, means for rotating the barrel, a receiving hopper below the discharge end of the barrel, distributing mem- 80 bers extending from end to end thereof consisting of sheets bent between their margins and secured in juxtaposition around the interior of the barrel with their inturned, slightly separated margins toward the barrel 85 center, spacing rings concentric with the barrel bearing outwardly against the sheets, a feed spout discharging into one end of the barrel into the distributors, bearing rollers on the spout, and a spacing ring at the proximate end of the barrel having a sinuous inner edge on which the spout rollers ride. 90

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

FRANK FOSTER.

Witnesses:

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C. R. STICKNEY.