

(No Model.)

T. CRANEY.
DRIER.

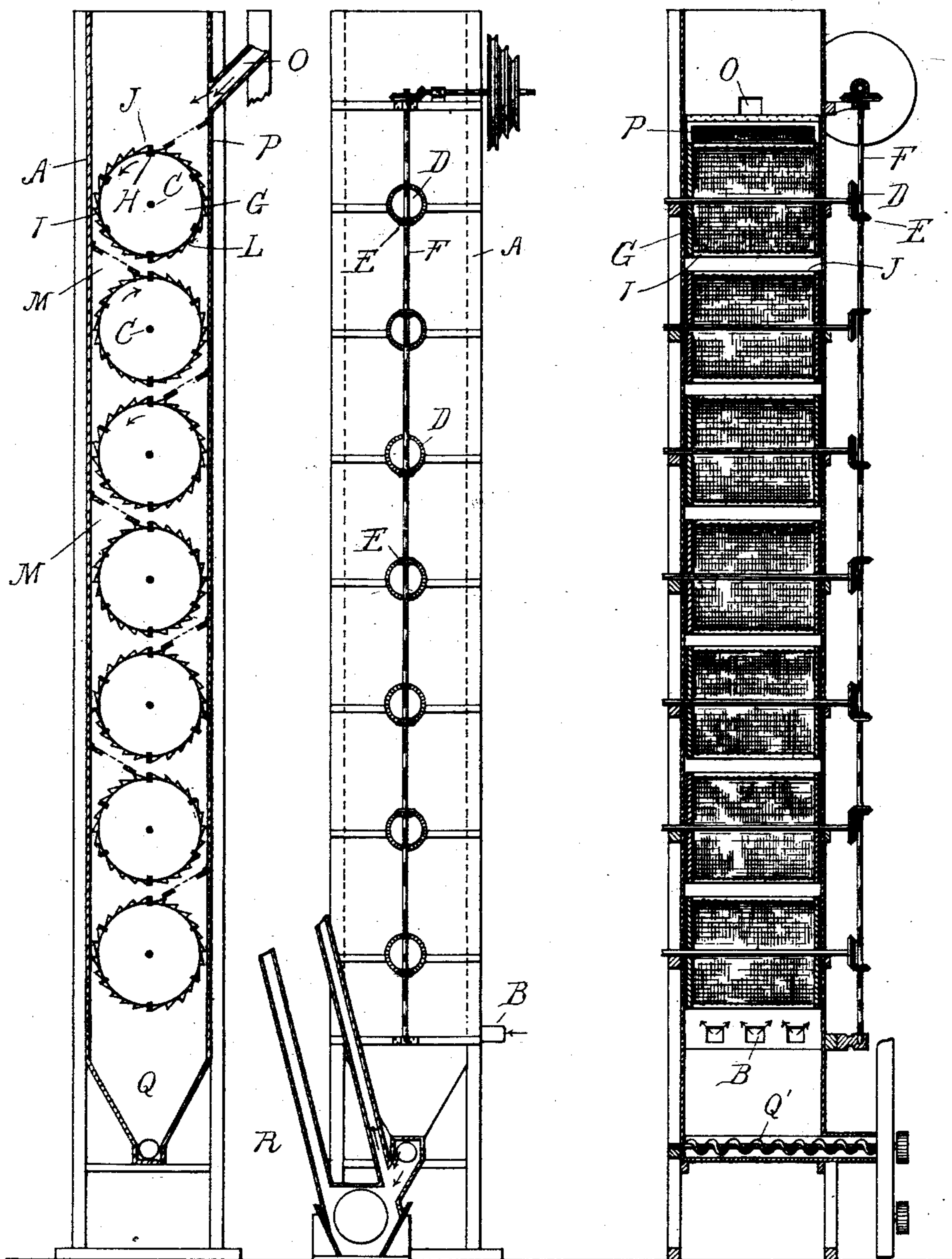
No. 525,758.

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Fig 3.

Fig 1.

Fig 2.



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UNITED STATES PATENT OFFICE.

THOMAS CRANEY, OF BAY CITY, MICHIGAN.

DRIER.

SPECIFICATION forming part of Letters Patent No. 525,758, dated September 11, 1894.

Application filed February 23, 1894. Serial No. 501,118. (No model.)

To all whom it may concern:

Be it known that I, THOMAS CRANEY, a citizen of the United States, residing at Bay City, in the county of Bay 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.

The invention is especially designed for drying salt and similar comminuted material but may be used for drying any material.

The invention consists in the peculiar construction and arrangement of a vertical series of rotating hollow screens and the construction of the feeding devices from an upper screen to the next lower one, whereby the particles or parts of the material are spread over the screen surfaces in thin layers at different points and in falling from the top to the bottom are held in this condition a considerable time during which they may be subjected to upwardly passing air currents to thoroughly dry the same.

The invention further consists in the peculiar construction of the rotating screens and of the deflectors or chutes arranged on the discharge sides of the currents to carry the material from an upper screen to the next lower one, these deflectors being vibrated by the rotating screens and thereby acting as knockers to clean the meshes of the rotating screens, and further in the peculiar construction, arrangement and combination of the various parts, all as more fully hereinafter described.

In the drawings, Figure 1 is an end elevation of my improved drier, showing the tower and the actuating devices for rotating the screens. Fig. 2 is a vertical, central section therethrough. Fig. 3 is a vertical, central section through Fig. 2.

A is a tower inclosed, and having an open top.

B are ducts or pipes leading into the lower end thereof to admit heated air from a blower or other source.

C is a series of transverse shafts arranged centrally through the tower and provided at their ends with bevel gear wheels D, with which mesh the bevel pinions E on the exterior vertical shaft F which is driven from any

suitable source of power, these gear wheels and pinions being so arranged that every alternate shaft is rotated in the same direction, and the two series are rotated in opposite directions. Secured to each of these shafts within the tower are the heads G which are connected together near the outer edge by means of cross-bars H forming a hollow open drum upon which I secure a cover I of perforated material, such as wire cloth, thus making hollow screens which are secured to the rotating shafts C. Preferably upon the exterior of the screens are secured the cross-bars or ribs J opposite the interior cross-bars H, being secured at their ends to the heads. Upon the heads and preferably upon the periphery I form a series of teeth L, as shown in Fig. 3.

M are chutes hinged below the discharge side of the rotating screens and having their free ends resting upon the heads of the screens, being vibrated in the rotation of the screens by means of the teeth L. These chutes I preferably form of open work, such as wire cloth or perforated sheet metal. At the upper end of the tower is a suitable feed spout O delivering upon a feed apron or chute P. At the lower end of the tower is a hopper Q into which the material falls and in the lower end of which is a conveyer Q' for carrying the material laterally into the elevator R, by means of which it may be carried to any desired point.

The parts being thus constructed their operation is as follows: Motion being given to the parts the screens will be rotated, the material will be fed through the spout O upon the chute P and centrally upon the upper drum, which turning, as indicated by the arrows, will carry the material to the side, the material sliding over that section of the screen upon which it falls as it moves from its horizontal to its vertical position, and finally will fall from the drum upon the vibrating chute M. As the rotating screen moves along in its motion after having discharged the material from its surface it will make a half revolution before fresh material is discharged upon it and during this half revolution it will be constantly jarred by the vibration of the feed chute, thereby thor-

oughly cleaning the meshes of the screen. In addition to this some of the material will fall through the screen and work on the inside which will tend further to keep the meshes from clogging. The material will thus take a zigzag course being carried slowly over each screen and chute successively until it reaches the bottom. It will thus be seen that the material is spread in a thin layer over different points of the rotating screen, and the chutes, and thus its fall through the tower will be retarded so that it may be held suspended with the particles separated at all times, so that the air may reach all parts of it to thoroughly dry it.

What I claim as my invention is—

1. In a drier, a tower, a vertical series of horizontally arranged rotating screens and chutes under the discharge side of the screens to deflect the material upon the next lower one, substantially as described.

2. In a drier, a tower, a vertical series of hollow screens and means for rotating the alternate screens in opposite directions, and chutes under the discharge side of the rotating screens to deflect the material from the

upper screen upon the next lower one, substantially as described.

3. In a drier, a tower, a vertical series of hollow rotating screens, and vibrating screens, forming chutes under the discharge side of the rotating screens to feed the material discharged from an upper upon a lower screen, substantially as described.

4. In a drier, the combination of a tower, a series of transverse driven shafts therein, cylindrical screens secured to the shafts, and each consisting of heads, connecting strips H and J between the heads, a wire screen secured to the heads between the strips, the teeth L on the heads, and the screen chutes M hinged to the side of the tower upon the discharge side of the drums and resting with their free ends upon the notched heads, substantially as and for the purpose described.

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

THOMAS CRANEY.

Witnesses:

M. B. O'DOHERTY,

O. F. BARTHEL.