Oct. 4, 1932. A. C. CHRISTENSEN 1,880,237

FOUNDRY SAND AERATING MACHINE

Filed March 30, 1931 3 Sheets-Sheet 1

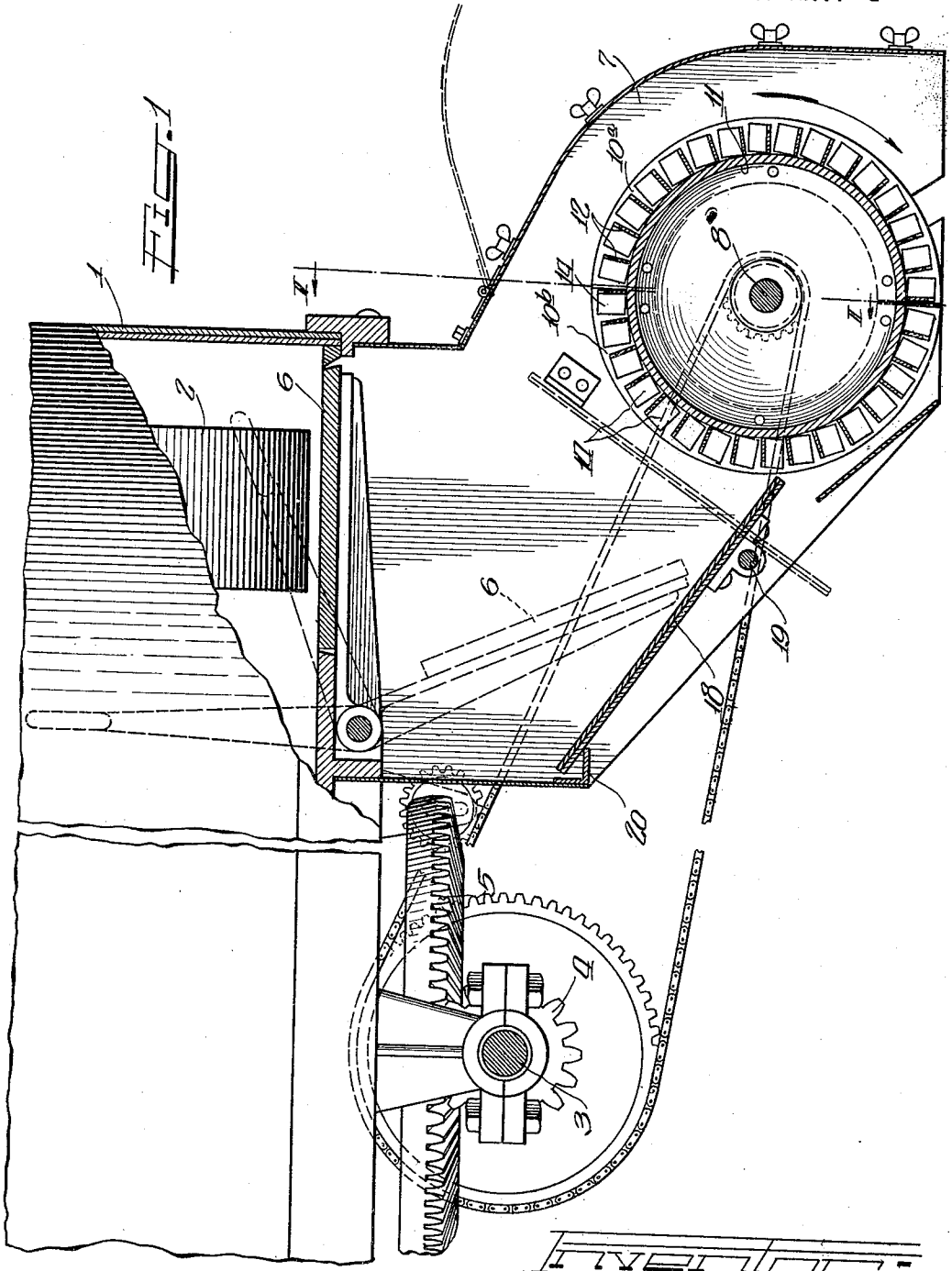


Fig. 1

Inventor:
Alfred C. Christensen
By: Charles T. Wills Atty.

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Filed March 30, 1931 3 Sheets-Sheet 2

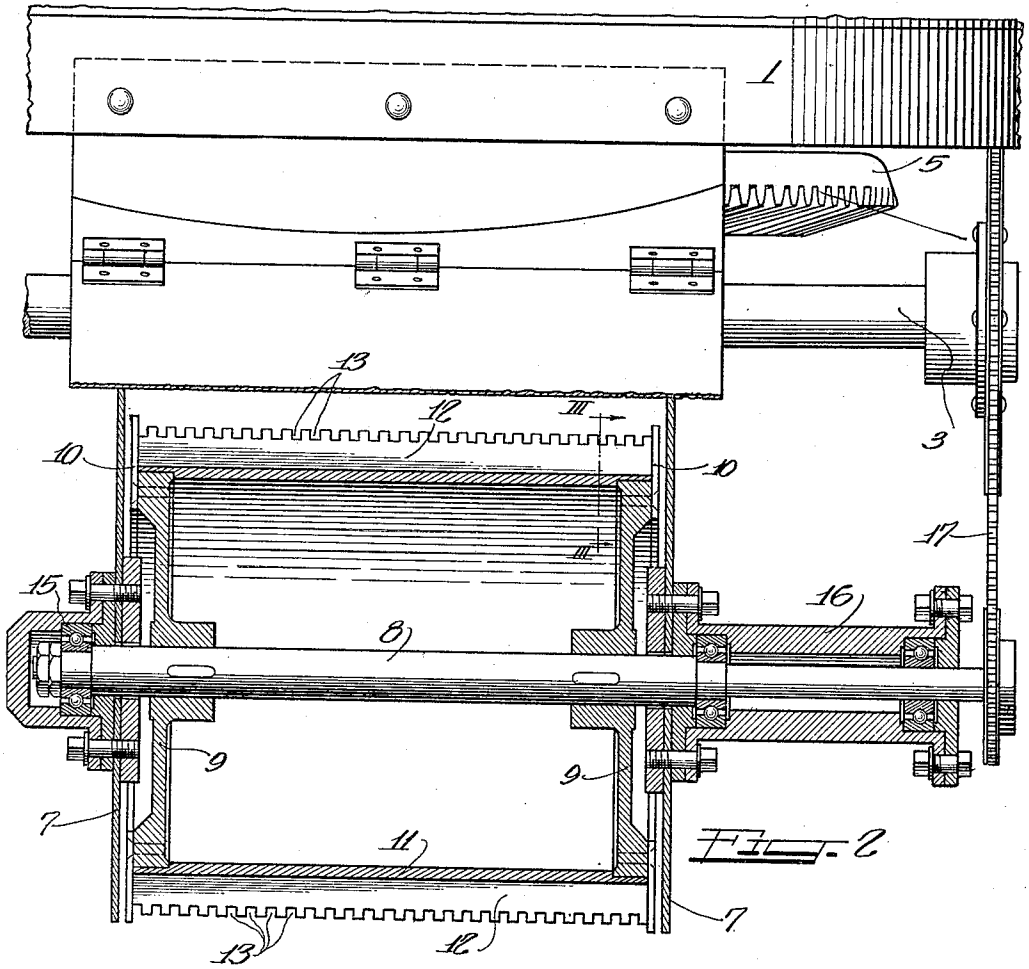
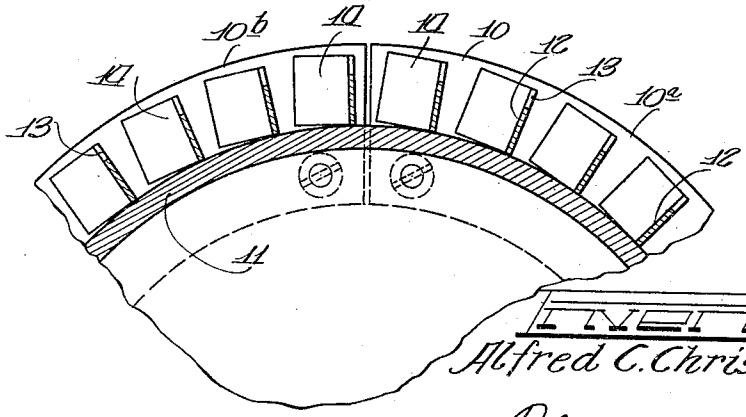


Fig. 2

Fig. 3



Inventor:
Alfred C. Christensen.
By: Charles Orsbill Attys.

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Filed March 30, 1931 3 Sheets-Sheet 3

Fig. 4

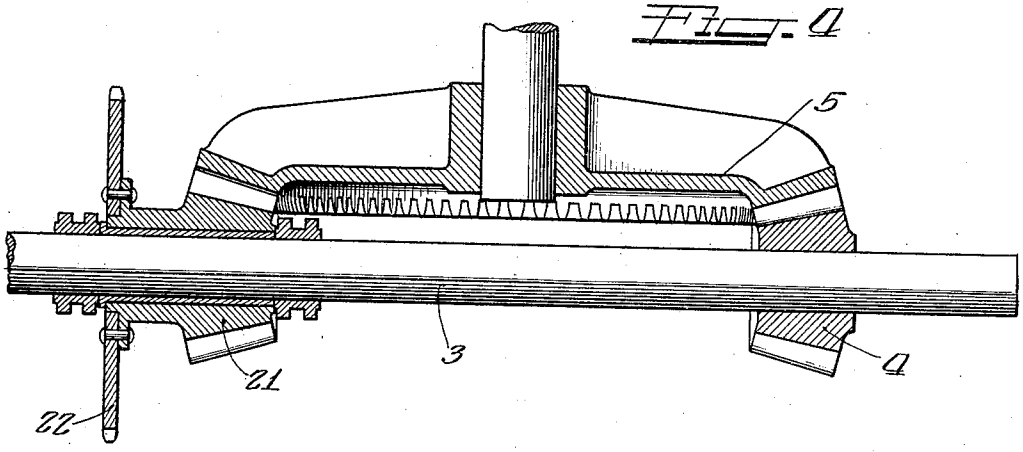


Fig. 5

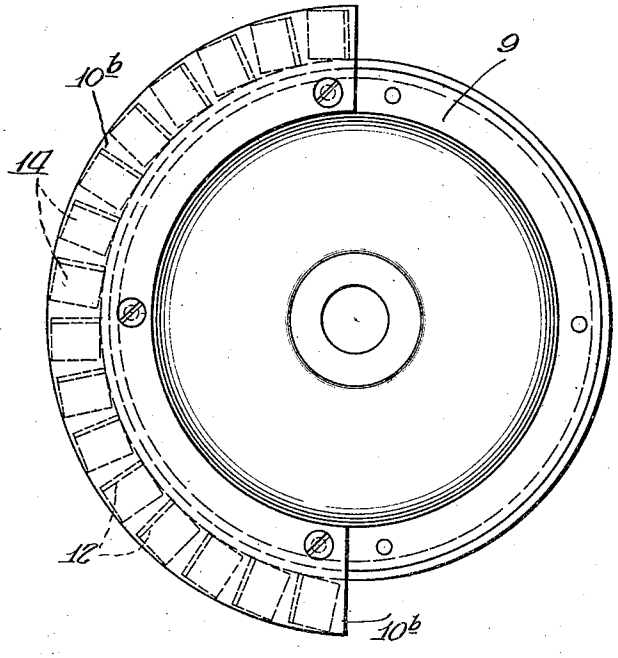
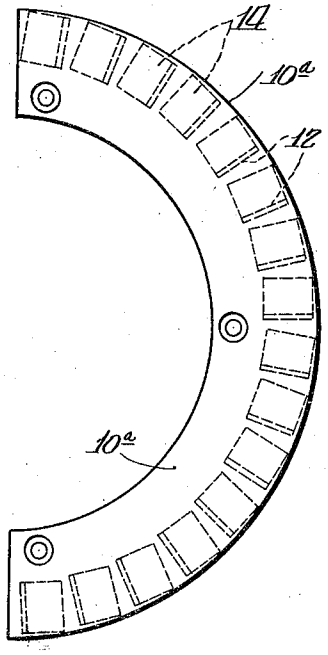


Fig. 6



Inventor:
Alfred C. Christensen.

By: Charles F. Wills Attys.

Patented Oct. 4, 1932 1,880,237

UNITED STATES PATENT OFFICE

ALFRED C. CHRISTENSEN, OF CHICAGO, ILLINOIS, ASSIGNOR TO NATIONAL ENGINEERING COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS

FOUNDRY SAND AERATING MACHINE

Application filed March 30, 1931. Serial No. 526,199.

This invention relates to a foundry sand aerating machine.

In order to properly develop the bond in facing, molding or synthetic sand mixture, it is necessary to exert considerable pressure on the layer of sand and the layer of sand under the mullers in the sand mixture. This often results in a caky condition of the sand when discharged from the mixture, particularly when highly bonded sands are prepared. In order to overcome this objection, a sand aerating device is provided in connection with the mulling machine for aerating the sand, breaking the cakes, and putting the same into a fluffy condition, making it an ideal sand for molding purposes.

The invention comprises the novel structure and combination of parts hereinafter described and not particularly pointed out and defined in the appended claim.

In the accompanying drawings which illustrate a preferred form of this invention and in which similar reference numerals refer to similar features in the different views:

Figure 1 is an enlarged fragmentary part elevational view and part sectional view of a sand mulling machine equipped with an aerating device involving this invention.

Figure 2 is an enlarged sectional view taken upon the line 2—2 of Figure 1, illustrating parts in elevation.

Figure 3 is an enlarged fragmentary sectional view taken upon the line 3—3 of Figure 2 looking in the direction of the arrow.

Figure 4 is a sectional view through a modified form of drive for the mullers and aerator.

Figure 5 is an end elevational view of the drum with one ring section removed.

Figure 6 is an elevational view of the removed ring section.

In the drawings, there is shown a mulling pan 1 in which sand mullers 2 are rotatably mounted upon a suitable spider (not shown) and driven from a shaft 3 through the instrumentality of gears 4 and 5 as is well known in the art. The bottom of the mulling pan 1 is provided with a door or gate 6 which is adapted to be swung downwardly as shown in Figure 1 for discharging the mixed sand from the mulling pan. Beneath the mulling pan, there is a suitable casing 7 attached to the bottom of the pan in which a shaft 8 is journalled in any suitable manner. Upon this shaft 8, there are keyed a pair of spaced discs 9 to the outer side surfaces of which flat rings 10 are secured. Each ring 10 consists of a plurality of sections. In the present instance a pair of semi-circular cylindrical sections 10*a* and 10*b* are shown whereby the same may be readily removed. A cylindrical drum 11 is supported by the disc 9 between the plat rings 10. A series of spaced sand cutting and aerating blades 12 are located upon the periphery of the drum 11. These blades have serrated, cutting and aerating edges 13 and the ends of the blades are turned at right angles to provide flanges 14 which are attached to the inner faces of the rings 10.

In referring to Figure 2, it will be noted that the shaft 8 is journalled in bearings 15 and 16 attached to the casing 7 and that the shaft 8 projects beyond the casing 16 and is geared by sprocket gearing 17 to the before mentioned shaft 3.

In the bottom of the aforementioned casing 7 that contains the aerating drum, there is a gate or door 18 which is mounted upon a rod 19 that extends across the casing. The upper end of this gate rests upon an angle member 20 which is secured to the rear wall of the casing. When the gate 18 is swung upwardly as shown in dotted line position, the sand which is discharged through the gate 6 of the mulling pan will fall through the bottom of the casing 7 without coming in contact with the aerating mechanism. However, when the gate 18 is in its operative position as shown in full line, Figure 1, the sand discharged through the gate 6 will gravitate down said gate and be acted upon by the sand aerating mechanism.

The mullers and supporting spider may be driven in one direction or in the other direction according to whether the drive shown in Figure 1 or Figure 4 is used. As the sand aerating drum must always rotate in the same direction irrespective of the direction of rotation of the muller spider, a slightly modified structure is illustrated in Figure 4

to provide for the drive in the other direction from that shown in Figure 1.

In referring to Figure 4, it will be noted that the shaft 3 has bevel gear 21 loosely journalled thereon that meshes with and is driven by the gear 5. The gear 21 carries a sprocket gear 22 for driving the aerator.

In Figures 5 and 6, there is illustrated the detachability of the ring sections 10*a* and 10*b* whereby said sections and the blades attached thereto may be readily removed where it is desired to replace or repair the blades.

From the foregoing it will be readily appreciated that a novel mechanism has been provided in combination with a sand mulling machine whereby the caky or lumpy sand may be thoroughly broken up and aerated and put in a fine fluffy condition for use. And as the aerating mechanism is driven from the shaft that operates the muller, it will be further appreciated that a simple mechanism has been provided.

I am aware that many changes may be made and numerous details of construction may be varied through a wide range without departing from the principles of this invention, and I, therefore, do not purpose limiting the patent granted hereon otherwise than necessitated by the prior art.

I claim as my invention:

The combination with a mulling pan having a discharge gate, a casing connected to the mulling pan beneath said discharge gate, an aerating device in said casing, and a door in the bottom of said casing, said door being swingable upwardly adjacent said aerating device to cause the sand to pass thru the door way and not contact said aerating device.

In testimony whereof I have hereunto subscribed my name at Chicago, Cook County, Illinois.

ALFRED C. CHRISTENSEN.