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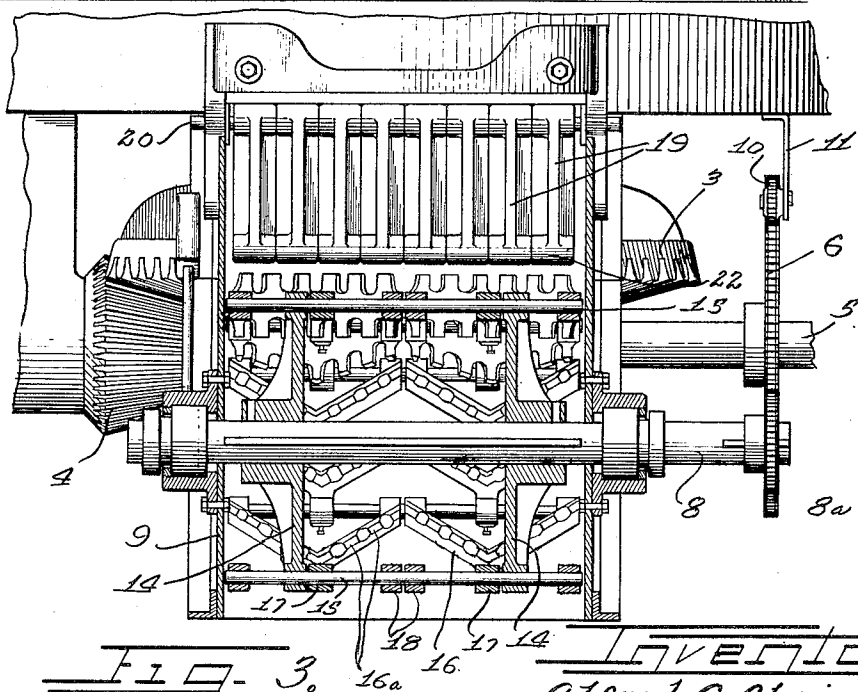
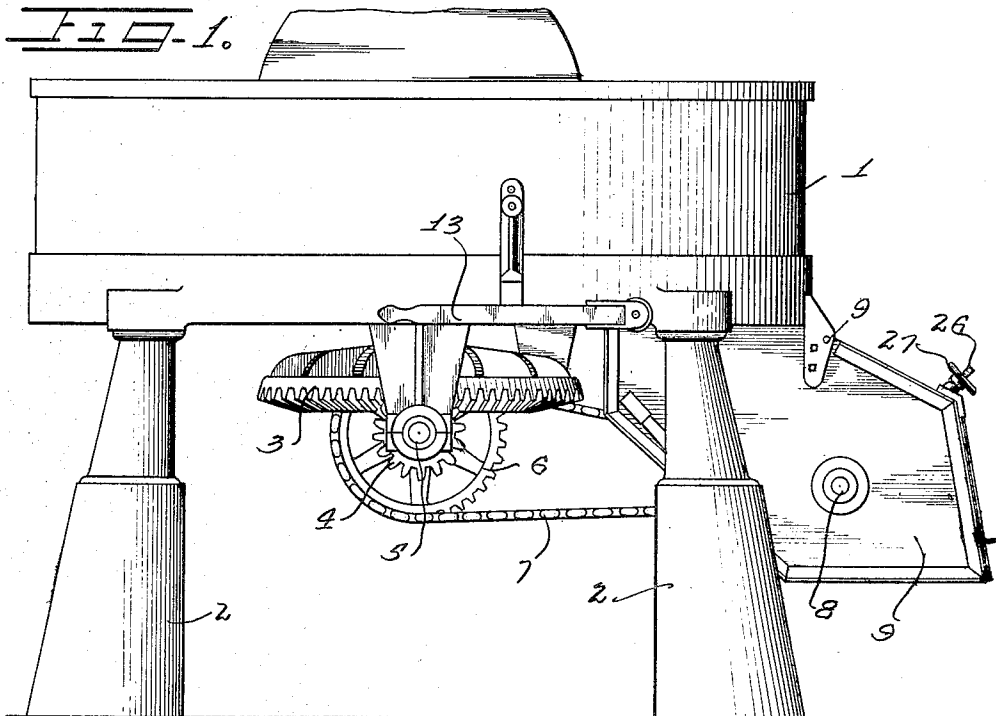
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1,926,083

SAND AERATING DEVICE

Filed Nov. 14, 1931

3 Sheets-Sheet 1



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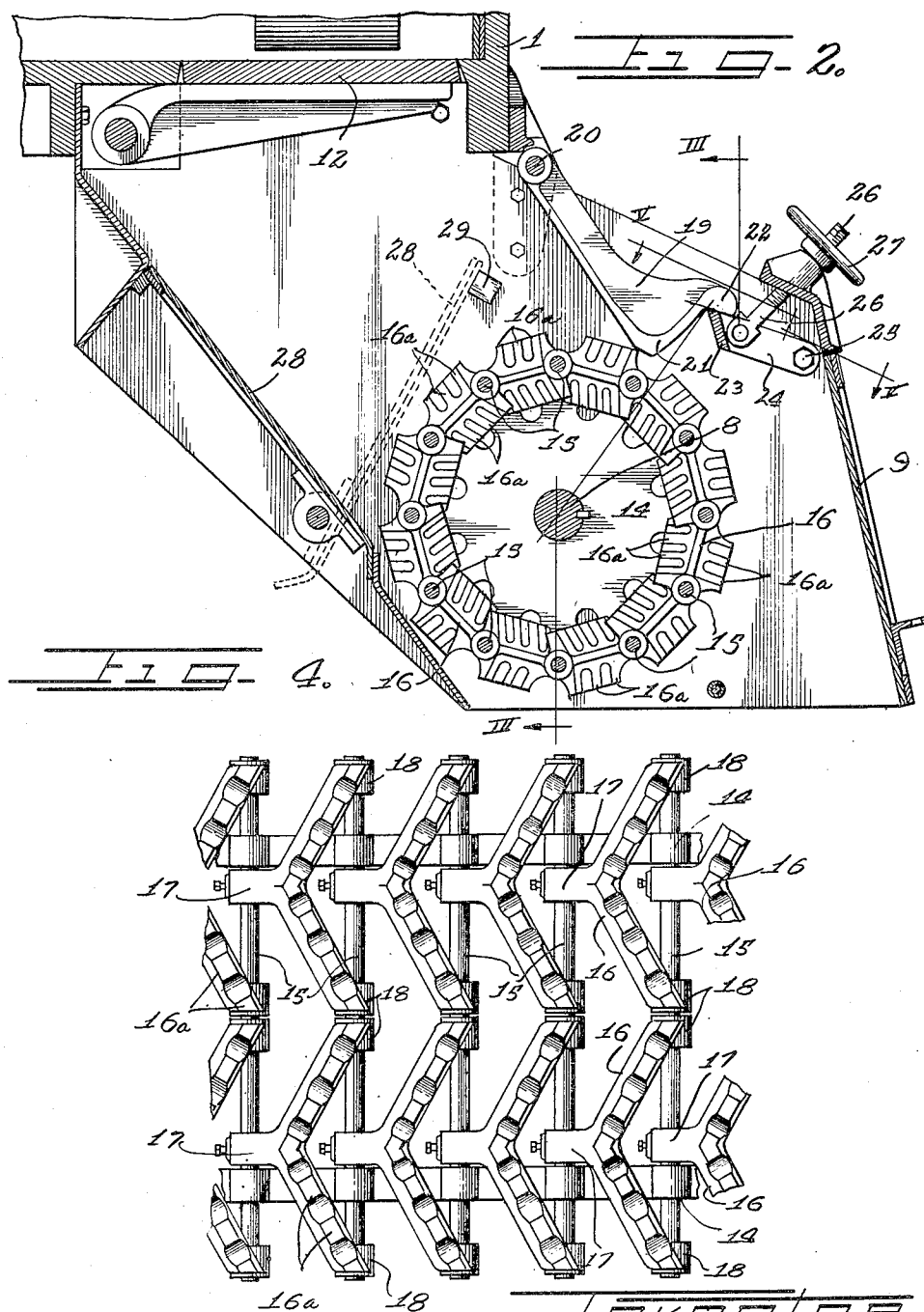
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SAND AERATING DEVICE

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3 Sheets-Sheet 2



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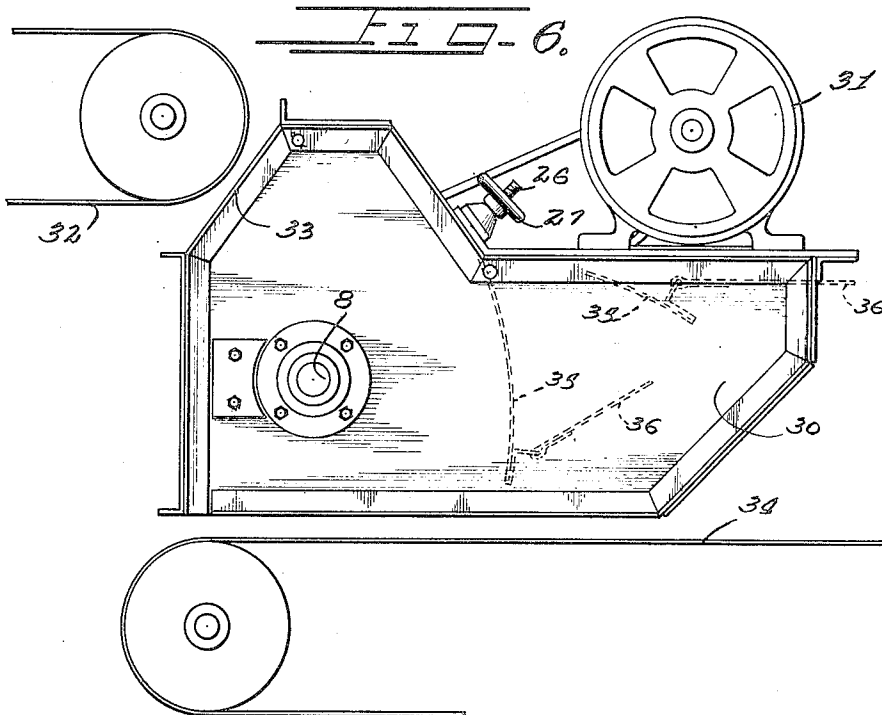
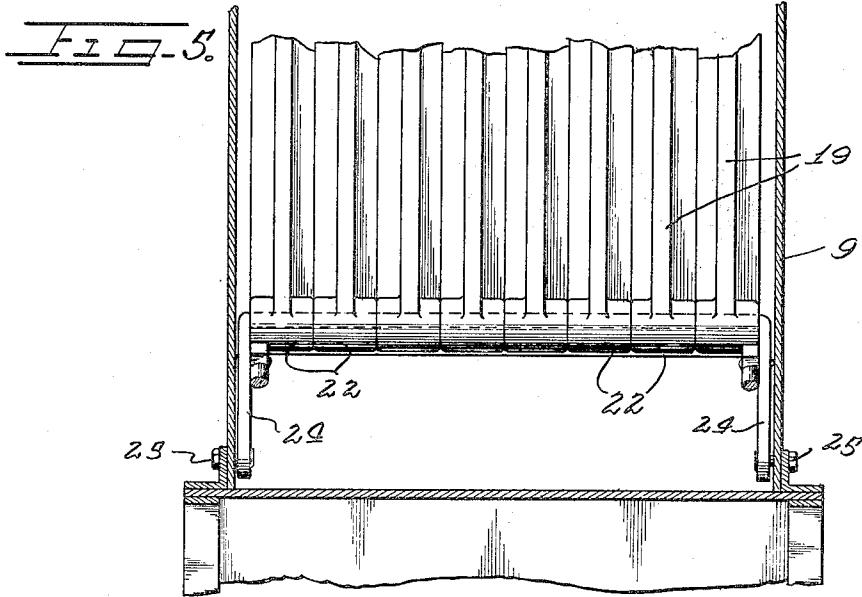
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3 Sheets-Sheet 3



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UNITED STATES PATENT OFFICE

1,926,083

SAND AERATING DEVICE

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Application November 14, 1931
Serial No. 574,937

7 Claims. (Cl. 259—9)

This invention relates to a sand aerating device that may be used with a sand mulling machine to break up any lumps of sand issuing from the mulling machine and thoroughly aerating the same, or that may be used independently thereof for breaking up lumps of sand, aerating the same and putting the same in such a state of fineness that it may be readily used for moulding purposes.

The invention comprises the novel structure and combination of parts hereinafter described and more particularly pointed out and defined in the appended claims.

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 elevational view of a sand mulling machine equipped with a sand aerating device involving this invention.

Figure 2 is an enlarged vertical sectional view through the sand aerating device.

Figure 3 is an enlarged sectional view taken upon the line III—III of Figure 2.

Figure 4 is a fragmentary and enlarged top plan view of the sand aerating rotor.

Figure 5 is an enlarged fragmentary sectional view taken upon the line V—V of Figure 2 looking in the direction of the arrows.

Figure 6 is an elevational view of the sand aerating device illustrating its use independent of the sand mulling machine.

In the drawings there is shown a mulling machine comprising a mulling pan or casing 1 which is supported upon pedestals 2. The mulling mechanisms or rollers generally used are driven by a gear wheel 3 and a beveled pinion 4 meshing therewith and secured to a shaft 5 as is usual in the art. A sprocket wheel 6 is secured to the shaft 5 and a sprocket chain 7 trained over the sprocket wheel 6 drives a sprocket wheel 8^a secured upon a shaft 8 to which the aerating rotor is attached as will later more fully appear.

The shaft 8 is journaled in a casing 9 which in Figures 1 to 5 is shown as attached to the casing of the mulling machine. As shown in Figure 3, an idler sprocket 10 which is mounted upon a bracket 11 secured to the bottom of the mulling pan may engage the sprocket chain for taking up any slack. It will of course be understood that the gear 10 may be adjustably mounted upon the bracket 11 for this purpose. The sand from the mulling machine may be admitted into the casing 9 through a suitable gate 12 (Figure 2) which is operated by a lever 13 (Fig. 1).

A pair of spaced spiders or discs 14 are keyed

upon the shaft 8. These discs 14 support equally spaced rods 15 adjacent their periphery. In the construction illustrated, it will be noted that the discs are provided with apertures through which the rods extend. Sand scouring and aerating devices 16 are mounted upon the rods 15 in the manner shown in Figure 4. These aerating and scouring devices are substantially Y-shaped with teeth 16^a upon each side. The apex of each device comprises a bearing 17 through which a rod 15 passes, while the diverging arms of the Y-shaped devices are provided with bearings 18 for receiving an adjacent shaft 15. It will accordingly be noted that the connection of the aerating devices 16 with the rods 15 brings the teeth 16^a upon the top and bottom thereof. These aerating and scouring devices 16 are preferably mounted upon the rods 15 side by side. In the present instance, only a pair has been illustrated side by side but it should be understood that the same may be multiplied as desired.

Means are provided in connection with the scouring and aerating devices as they rotate with the spiders 14 upon the shaft 8 for breaking up and pulverizing any lumps of sand that may be discharged from the mulling machine or that may be fed into the aerating casing. In the illustrated form of this invention, the means above mentioned consist of a series of hammers or the like 19 which are freely journaled upon a rod 20 mounted in the upper portion of the casing 9. In referring to Figure 2 it will be noted that the hammers 19 are provided with heads 21 which cooperate with the sand scouring and aerating devices 16 for breaking up the lumps of sand. The upper portions of the heads terminate in forwardly projecting rests 22 which engage a bar 23 which is provided upon its ends with arms 24 pivoted to the casing as indicated at 25. A screw 26 is pivoted to one of the arms 24 and extends through the casing 19. The outer end of the screw 26 is provided with a nut 27 that engages the casing and that may be rotated for adjusting the bar 23 for raising or lowering the hammers 19 in order to vary the distance that they are supported from the aerating devices 16. It should be particularly noted that the hammers 19 are free to rise and fall in accordance with the lumps of sand passing between the same and the aerating devices.

In referring to Figure 2, it will be noted that the casing 9 is provided with a swingable door or gate 28. When the gate 28 is in its full line position, the sand discharged from the mulling machine will be acted upon by the aerating de-

vices. However, when the gate 28 is swung upwardly into dotted line position, the sand will escape through the opening without coming in contact with the aerating devices. Suitable stops 29 may be provided upon the casing 9 for supporting the gate 28 in its dotted line position.

The sand aerating device heretofore described in connection with a mulling machine, may be used independently of such mulling machine for aerating and scouring sand as illustrated in Figure 6. In this figure there is shown a modified casing 30 for supporting the shaft 8 that carries the sand aerating devices. A motor 31 is mounted upon the casing 30 for rotating the shaft 8 together with the aerating devices. The sand is adapted to be fed into the casing by means of a feed belt 32 which discharges the sand through an inlet 33 in the top of the casing. The bottom of the casing is provided with a suitable opening whereby the sand may be deposited upon a belt 34 for conveying the sand to any desired destination. In the casing 30, there is a swingable gate 35 shown in dotted lines to which a rod or cable 36 is connected whereby the gate may be adjusted as indicated in dotted lines to regulate the forward discharge of the sand from the casing 30.

It will be appreciated that the double toothed aerating device will pass through a considerable depth of sand and render the same sufficiently fine and free from lumps for moulding purposes. At the same time, the particular formation of the sand aerating devices causes certain parts of the sand to flow in directions parallel to the shaft 8 and thereby causes a better agitation and better aeration thereof. At the same time the sand aerating devices are sufficiently strong and substantial to withstand the severe usage to which they are adapted to be put. With reference to Figure 4, it will be apparent that a pair of aerating devices side by side produce a zigzag double line of teeth producing thereby an aerating rotor having spaced zigzag teeth. It will be further appreciated that the use of the hammers 19 in cooperation with the aerating rotor will thoroughly pulverize any lumps of sand that may occur.

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 is necessitated by the prior art.

I claim as my invention:

1. In a sand aerating device, a shaft, a pair of spaced spiders keyed upon said shaft, rods extending between said spiders and Y-shaped aerating devices mounted upon said rods and having exterior and interior teeth. 80
2. In a sand mulling machine, a rotor comprising a shaft, spaced spiders upon said shaft, spaced rods supported by said spiders, and Y-shaped elements having their apices mounted upon a rod and their diverging arms mounted upon an adjacent rod. 85
3. In a sand aerating machine, a casing, a rotor in said casing, a series of hammers pivotally mounted upon said casing and having portions cooperating with said rotor, each of said portions having an outwardly offset shoulder, a bar in said casing upon which each shoulder rests and means for pivoting said bar to said casing for adjustment toward and from said rotor. 90 95
4. In a sand aerating machine, a casing, a rotor mounted in said casing, a rod mounted upon said casing above said rotor, a series of hammers pivotally mounted upon said rod, a bar engaging the free ends of said hammers, arms pivoted to said casing and attached to said bar, a bolt attached to an arm and extending through said casing and a nut threaded upon said bolt for sustaining said bar in any adjusted position, said hammers having downwardly directed heads between said rod and bar. 100 105
5. In a sand aerating device, a casing, a sand aerating rotor journaled in said casing, said rotor comprising spaced members extending substantially parallel to the axes thereof, said members having a longitudinally directed zig-zag formation and teeth upon their outer and inner edges. 110
6. In a sand aerating machine, a rotor comprising a plurality of spaced members extending in the direction of the axis of the rotor, each member having a longitudinally directed zig-zag formation and teeth upon one of its edges. 115
7. In a sand aerating machine, a rotor having spaced peripheral means, extending in zig-zag formation in the direction of the axis of the rotor, said means having outer and inner toothed surfaces. 120

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