

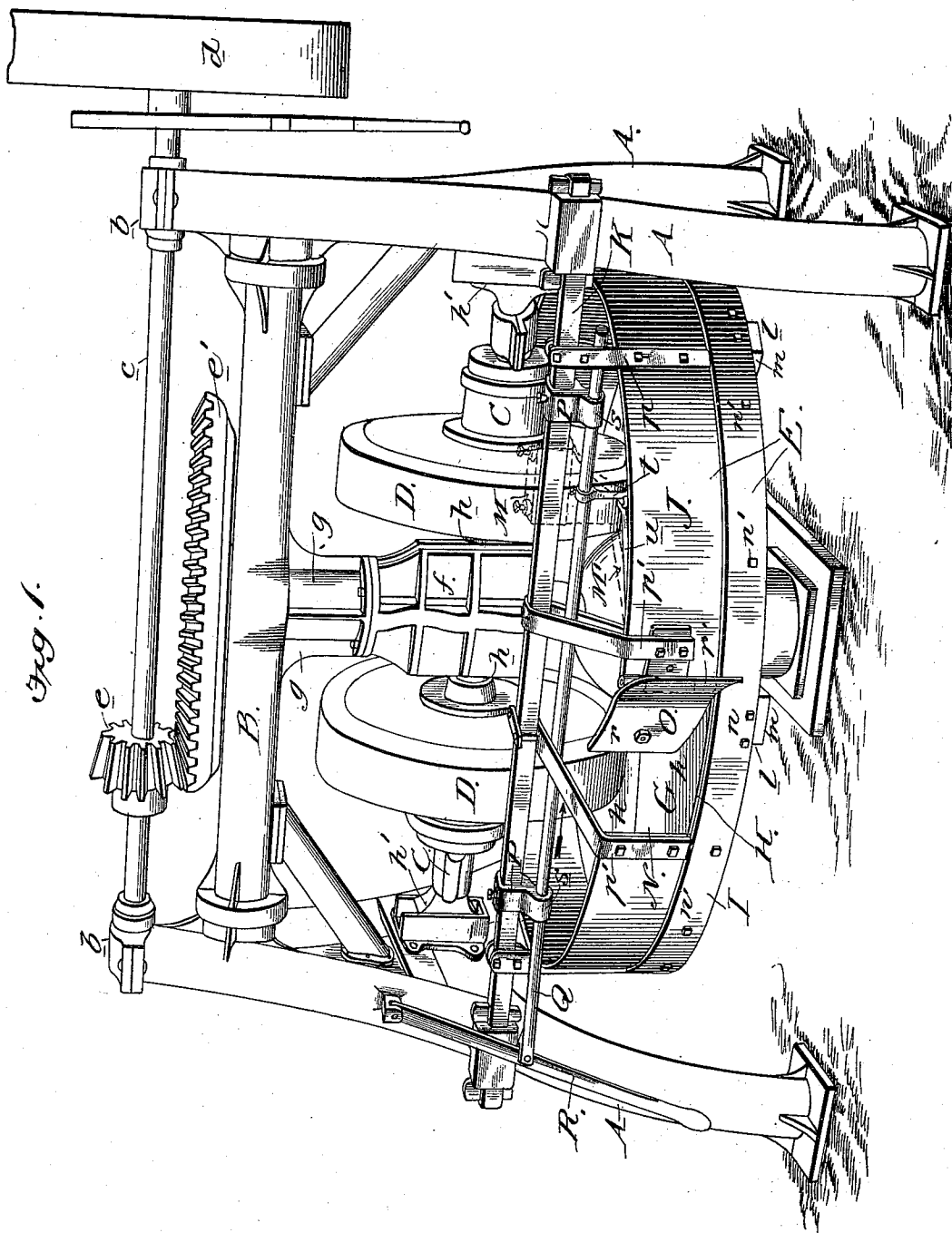
(No Model.)

2 Sheets—Sheet 1.

J. THOMPSON & W. F. VAUGHN.
PAN GRINDING MACHINE.

No. 501,583.

Patented July 18, 1893.



Witnesses
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UNITED STATES PATENT OFFICE.

JOHN THOMPSON, OF BUCYRUS, OHIO, AND WILLIAM F. VAUGHN, OF ALTOONA, PENNSYLVANIA; SAID THOMPSON ASSIGNOR TO THE FREY-SHECKLER COMPANY, OF BUCYRUS, OHIO.

PAN GRINDING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 501,583, dated July 18, 1893.

Application filed April 8, 1893. Serial No. 469,554. (No model.)

To all whom it may concern:

Be it known that we, JOHN THOMPSON, residing at Bucyrus, in the county of Crawford and State of Ohio, and WILLIAM F. VAUGHN, residing at Altoona, in the county of Blair and State of Pennsylvania, citizens of the United States, have invented certain new and useful Improvements in Pan Grinding-Machines; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

Figure 1, is a perspective view of a clay grinding machine embodying our invention. Fig. 2, is a top plan view of the pan showing the means for operating the discharge gate, and showing also the mullers in dotted lines. Fig. 3, is a cross sectional view on the line $x-x$ of Fig. 2. Fig. 4, is a perspective view of one of the sections or bottom plates of the pan.

Our invention relates to that class of grinding machines employing a pan and mullers or crushers, and has special reference to those machines used for grinding wet or damp clay and known as wet-pan grinding machines.

The present invention is an improvement on the machine shown in the Patent No. 454,780, granted to the said John Thompson on the 23d day of June, 1891; and it consists in the constructions and combinations of devices which we shall hereinafter fully describe and claim.

In the said drawings, a suitable frame work composed of vertical standards A and cross piece B of heavy tubular or other material is adapted to sustain and carry the requisite machinery associated with the operation of the pan; the said cross piece furnishing a secure bearing for the vertical drive shaft a , while the end standards are extended above the cross piece and are provided with boxes or bearings b , in which is journaled the shaft c , carrying a driving pulley or gear d , and also a beveled pinion e adapted to mesh with a large gear e' horizontally secured upon the upper end of the vertical shaft a . The vertical shaft is suitably stepped at its lower end,

and also passes through a sleeve f secured to a hanger g depending from the cross piece B, and provided with vertical ways h which, with similar ways h' formed in or on the vertical standards A, receive the ends of the independent shafts C carrying crushing rolls or mullers D. The construction and operation of these parts being substantially like the similar parts found in the aforesaid former patent, a more minute explanation of them does not seem necessary. In said former patent, the pan E was shown and described as being securely keyed to the lower end of the vertical shaft, but in the present instance the construction and operation of the pan is essentially different from the former one as we will now describe.

In the present instance the pan is composed of two essential parts, one serving as a bottom or floor and the other as a surrounding rim or flange, and one of said parts being movable while the other is fixed. The movable part G is the bottom proper, and is keyed or otherwise secured to the vertical drive shaft so that it may partake of the shaft's rotation. This bottom is made up of metal plates h , adapted to rest upon and be secured to radial arms l projecting from the center or hub of the pan, the said plates constituting a track or floor upon which the clay or other material is placed, and, by the rotation of the bottom, is carried to and beneath the mullers or rollers.

The outer edges of the plates h are bent into angular shape to form an annular trough or channel H, the front or outer wall of which is formed by a band or flange I surrounding the outer ends of the plates h , and having its lower edge seated upon lugs or shoulders m formed on the outer ends of the radial arms l as shown in Fig. 3, and said band or flange I being secured in position by bolts $n n'$, the former passing through it and into the ends of the radial arms while the bolts n' pass through the band and into lugs o , depending from the plates h as shown in Figs. 3 and 4.

Within the trough or groove formed by the bent ends of the plates h and surrounding band or flanges I, the vertically disposed rim

or flange J is fitted and rigidly and immovably suspended by arms pp' , depending from a tie rod K securely fitted to the standards A as shown, and as described in the former patent aforesaid, and upon which are adjustably secured the boxes or castings M, provided with scrapers M' , adapted to sweep the upper face of the revolving bottom as the latter travels below them.

In machines of the character described it has been usual to rotate the whole pan, and to effect the discharge of the material by means of a stationary and fixed board or chute, generally set at an incline with its lower face against the bottom of the pan, whereby as the latter revolved, the clay or material would be held back by the discharge board and finally would be crowded up and along the board, and be removed from the upper end thereof by hand, or by falling over the upper side. In some classes of machines the pulverized or ground clay or material would be shoveled from the pan by hand, but both of these processes are slow and costly, and are undesirable for various reasons. We overcome the objections by the use of a strong, simple and positive mechanism which directs the clay or material to and finally through a gate controlled outlet whereby the pan may be speedily emptied of its charge with but little difficulty. The mechanism employed for our purpose is simple, and may be applied to this type of machines with but little expense. It will be borne in mind that, in the present instance, the bottom and rim of the pan are wholly independent of each other, the bottom being secured to the vertical drive shaft while the rim is fixedly secured with its lower edge mounted in the annular trough H around the outer edge of said bottom, whereby said rim serves as a guide for the bottom during the latter's rotation.

Through the fixed rim J is made a discharge opening N, and to one wall of this opening is hinged a gate O with two wings r r' , one of which r is long enough to close the opening N when the gate is closed, while the other wing r' is preferably set at an angle to the wing r , or may be curved if preferred, and projects beyond the plane of the outer side of the rim as shown.

Upon the tie rod K is adjustably fitted the blocks or castings P having bearings s , in which a rod Q is mounted so that it may be reciprocated back and forth in planes about parallel with the tie rod. One end of this reciprocating rod is connected with a pivotally secured lever R, and upon the rod near the opposite end is an arm t , which is loosely jointed to a link u , running to and loosely connected with an eye bolt w fixed in the wing r of the hinged gate. From this description it will be seen that when the gate is closed its long wing r securely closes the discharge opening N in the side of the rim of the pan. When the machine is in operation the rim remains stationary and the bottom

rotates to carry the clay or material beneath the mullers or rolls whereby the material is thoroughly pulverized.

During the grinding process the finer clay or material works its way outward toward the rim and is carried along with the revolving bottom. The lever R being now moved inward, the rod Q is shifted in its bearings in the direction of the arrow and, pulling upon the link u , causes the gate to swing upon its hinge and its long wing r to move inward any desired distance. This gate being on the immovable rim J and being braced by the connecting link u , it is manifest that as the clay is carried along by the revolving bottom it contacts with the gate and is directed by the latter through the outlet or opening N to a receiver or carrying apron, not shown, outside of the machine and below the opening, so that it may be readily transported to any desired point. The distance the gate may be opened will depend upon the throw of the lever R, and therefore, the discharge of material may be regulated under all conditions, and the discharge may be cut off at any time by moving the lever R in the opposite direction and thereby closing the gate. We thus provide a simple and secure mechanism for positively controlling the discharge of the pulverized clay or material.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. A pan grinding machine having a revoluble bottom with channel or trough formed in it and surrounding its outer edge, a rim fixed with relation to said bottom and surrounding the same, and provided with a gate or outlet in its side through which the crushed material may be discharged, and means for rotating said bottom and crushing the material.

2. In a pan grinding machine and in combination with complementary grinding and power devices, a revoluble bottom or floor fixed to a driver and having a depression or trough at its outer edge, and an annular rim fixed with relation to said bottom with its lower edge fitted in the depression or trough thereof, said rim having a gate or outlet in its side for the discharge of the crushed material.

3. In a pan grinding machine and in combination with complementary crushing and power devices, a bottom or floor upon which the material is crushed, a stationary rim or flange surrounding the outer edge of the same and having an opening through one side, a gate adjustably secured in said opening to automatically control the discharge of material, and means for adjusting the gate.

4. In a grinding machine and in combination with complementary grinding and power devices, a pan fixed to the driver and comprising sections or plates having bent outer ends forming a continuous annular trough or channel said sections having lugs at their outer ends, a band or flange bolted to said

lugs and forming the front wall of the trough or channel, a stationary vertically disposed rim or flange having its lower edge fitted in said trough or channel, and means for discharging the material through the rim during the rotation of the bottom or floor.

5. In a grinding machine having complementary grinding devices including a pan having a bottom or floor fixed to a driver and a rim or flange held immovably with relation thereto, and having its lower edge fitted in a depression or trough surrounding the outer edge of the bottom or floor a gate hinged to and controlling an opening in said rim or flange, and a lever and connections therefrom to the gate for adjusting the latter and increasing or decreasing the size of the discharge outlet and directing the material through the same.

6. In a grinding machine having a pan with movable bottom or floor fixed to a driver and a rim or flange having its lower edge fitted in a trough or channel in said bottom or floor, a gate hinged to said rim or flange and closing a discharge opening therein, a rod mounted to slide upon a fixed portion of the machine, means for reciprocating the rod, and a link

connection between the rod and gate whereby the latter is adjusted by the movement of the rod.

7. In a grinding machine the combination with the frame and the driver, of a pan comprising a bottom or floor fixed to the driver, and a stationary rim or flange having its lower edge fitted in a trough or channel in or near the outer edge of the bottom or floor, and having a discharge opening in its side, a gate hinged to said rim or flange and adapted to close said opening, a rod mounted to slide in bearings on a fixed part of the machine, a lever for operating the rod, and a link pivotally connected with an arm on the rod and with the gate whereby when the rod is shifted the gate is opened or closed to regulate the discharge of the material and to feed the material through the discharge opening, substantially as herein described.

In testimony whereof we affix our signatures in presence of two witnesses.

JOHN THOMPSON.

WILLIAM F. VAUGHN.

Witnesses:

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