

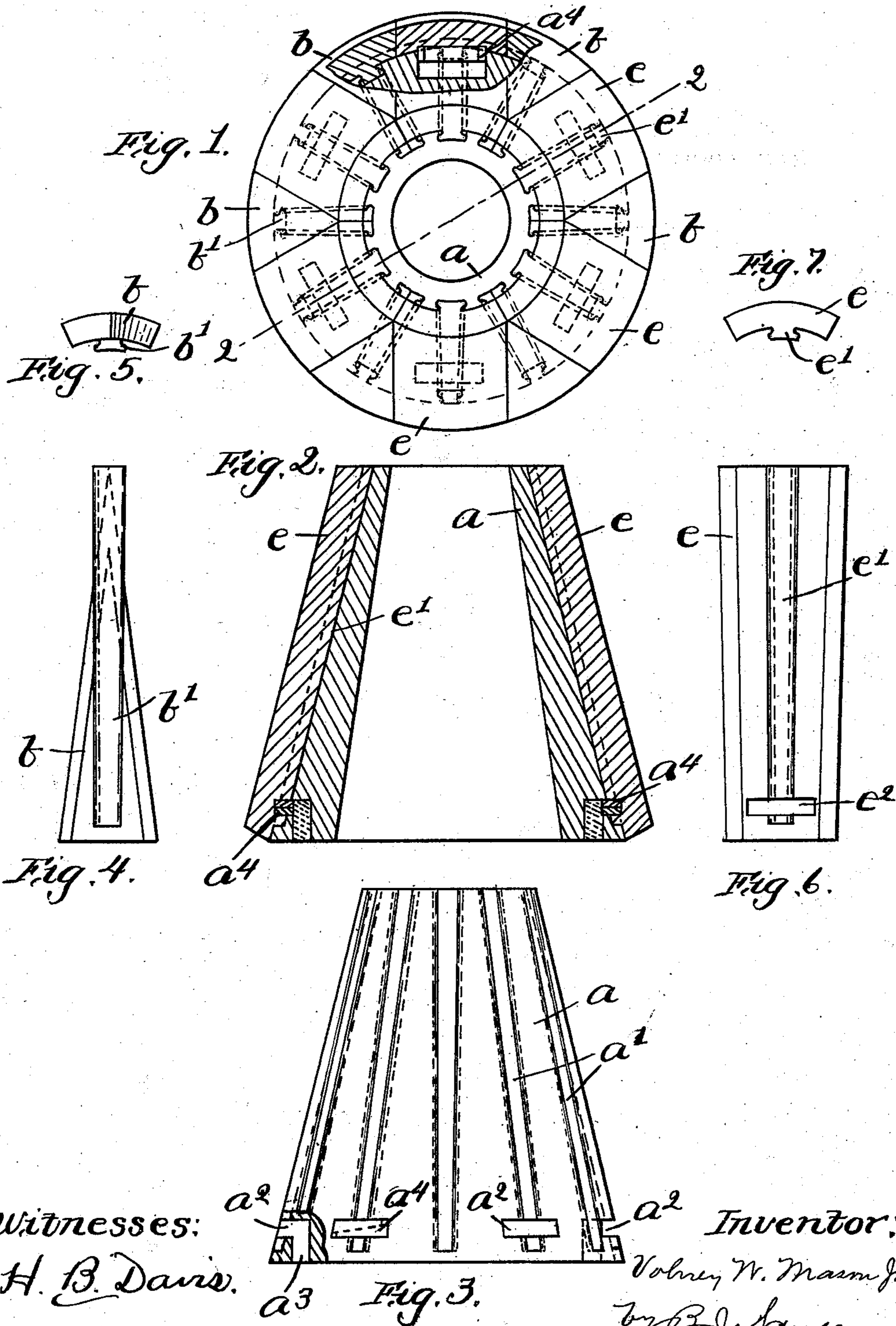
No. 700,526.

Patented May 20, 1902.

V. W. MASON, JR.
GRINDING OR CRUSHING HEAD.

(Application filed Apr. 26, 1901.)

(No Model.)



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UNITED STATES PATENT OFFICE.

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GRINDING OR CRUSHING HEAD.

SPECIFICATION forming part of Letters Patent No. 700,526, dated May 20, 1902.

Application filed April 26, 1901. Serial No. 57,607. (No model.)

To all whom it may concern:

Be it known that I, VOLNEY W. MASON, JR., of the city, county, and State of New York, have invented an Improvement in Grinding or Crushing Heads, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

In another application filed by me, Serial No. 56,358, a grinding or crushing head is shown comprising a core and a number of segments mounted thereon and connected thereto, and as a way of illustrating the invention embodied in said application the core was shown as conical and the segments tapering or wedge-shaped from end to end. The segments were dovetailed to the core and were secured by suitable means. The tapering or wedge-shaped segments were driven onto the core in a direction from the larger toward the smaller end thereof. In some instances I find it is preferable to drive the segments onto the core from the smaller toward the larger end; and this invention has for its object to improve the construction of a grinding or crushing head having conical core and a number of segments thereon, to the end that the segments may be driven onto the core in a direction from its smaller toward its larger end.

In accordance with this invention the core is formed or provided with a number of longitudinal dovetailed grooves or recesses extending from the top or smaller end to a point near the bottom or larger end, the lower ends of said grooves or recesses terminating abruptly and forming abutting shoulders. Two sets of segments are provided, the segments of one set being made wider at the bottom than at the top and the segments of the other set being made wider at the top than at the bottom. Each segment has formed or provided on its inner side a longitudinal dovetailed rib adapted to enter and fit snugly one of the dovetailed grooves or recesses in the core, and the several segments of the two sets are alternately arranged on the core and abutted together. The dovetailed grooves or recesses and also the correspondingly-shaped ribs are preferably made tapering from end to end—as, for instance, from top to bottom—of the core. When the segments are driven onto the core, the lower ends of the ribs will

abut against the abutting shoulders provided at the lower ends of the grooves or recesses.

Means are provided for securing the several segments in position after they have been driven onto the core.

Figure 1 shows in plan view and partial section a grinding or crushing head embodying this invention. Fig. 2 is a vertical section of the same, taken on the dotted line 2 2, Fig. 1. Fig. 3 is a side elevation of the core with segments removed. Figs. 4 and 5 are details of one of the segments of one set. Figs. 6 and 7 are details of one of the segments of the other set.

The core *a*, herein shown for the sake of illustrating my invention, is made conical and also hollow and may be composed of ordinary steel or cast-iron or any other suitable metal. The core is formed or provided with a number of external dovetailed grooves or recesses *a'*, extending from the top or smaller end to a point near the bottom or larger end of the core, the lower end of each groove or recess forming an abutting shoulder near the bottom of the core. These grooves or recesses are all made a little wider at the top than at the bottom. Every other groove or recess is formed or provided near its lower end with a transverse key-receiving recess *a''*, which crosses the groove or recess at substantially right angles, and each key-receiving recess *a''* has an entrance *a'''* thereto at the bottom of the core, through which keys *a''''* may be introduced to said key-receiving recesses *a''*.

b represents one of the segments of one set, and *c* represents one of the segments of the other set, there being two sets of differently-shaped segments herein provided, and it is intended to make said segments of manganese steel.

The segments *b* are made wider at the bottom than at the top and are provided upon their inner sides each with a dovetailed rib *b'*, extending from the top to a point near the bottom and shaped to correspond to the grooves or recesses *a'*, formed or provided in the core. These segments *b* are driven onto the core in a direction from the top or smaller end toward the bottom until the lower ends of the ribs *b'* abut against the abutting shoulders formed or provided at the lower ends of the grooves or recesses *a'*.

The segments *b* are driven onto the core *a*, entering every other groove or recess *a'* therein, thereby leaving spaces between them for the other segments *e*. The ribs *b'* are made wider at the top than at the bottom to adapt them to snugly fit the grooves or recesses *a'* in the core.

The segments *e* are made wider at the top than at the bottom and are provided upon their inner sides each with a dovetailed rib *e'*, extending from the top to a point near the bottom and shaped to correspond to the grooves or recesses *a'*, formed or provided in the core. At a point near the bottom of each segment *e* a key-receiving recess *e²* is formed or provided, which crosses the rib *e'* at substantially right angles and which is adapted to be disposed opposite one of the key-receiving recesses *a²* in the core when the segments are driven onto said core. The dovetailed rib *e'* is made wider at the top than at the bottom, and when the segment is driven onto the core the lower end of said rib abuts against the abutting shoulder formed or provided at the lower end of the groove or recess *a'* in the core.

Wedge-shaped keys *a⁴* *a⁴* are inserted through the opening *a³* and properly placed in the key-receiving recesses in substantially horizontal position, being thereby transversely-disposed relative to the ribs *e'*. Said keys lock the segments against displacement on the core. After the keys *a⁴* *a⁴* have been introduced the openings *a³* are closed by pouring molten zinc or any other suitable metal thereinto, which serves to not only close said opening, but primarily to hold the keys *a⁴* *a⁴* securely in place.

The segments *e* will be driven onto the core alternately relative to the segments *b*, and when properly disposed thereon will abut against the segments *e* and inclose the core.

It will be seen that keys are provided only for the segments *e*; but if deemed necessary they may also be provided for the segments *b*. In case it is desired to remove the segments or any of them the zinc and the keys will be removed, and then the segment or segments may be driven off of the core.

By providing the core with tapered dovetailed grooves and the segments with tapering dovetailed ribs fitting said grooves I find in practice that when said segments are made of manganese steel the tendency due to the ductility or flow of the metal is for the abutting sides of the segments to crowd together or against each other and overlap more or less, resulting from the stress or impact or duty performed by them, and such action, while tending to draw the segments away from the core, acts to more firmly and permanently lock them to the core.

The means herein shown for attaching the segments to the core I do not herein broadly claim, as the same is contained in my application, Serial No. 56,358, before referred to.

I claim—

1. A grinding or crushing head comprising a conical core having a number of dovetailed grooves extending from the top to a point near the bottom each having an abutting shoulder at its lower end, a set of external segments, made wider at the bottom than at the top, placed on said core and having longitudinal dovetailed ribs fitting the dovetailed grooves in the core, and another set of external segments, made wider at the top than at the bottom, placed on said core and having longitudinal dovetailed ribs fitting the dovetailed grooves of the core, the several segments of said sets being alternately disposed about the core, and abutted together, and the lower ends of the ribs abutted against the abutting shoulders at the lower ends of the grooves, substantially as described.

2. A grinding or crushing head comprising a conical core having a number of dovetailed grooves extending from the top to a point near the bottom, made wider at their upper ends than at their lower ends and having an abutting shoulder at their lower ends, a set of external segments, made wider at the bottom than at the top, placed on said core and having longitudinal dovetailed ribs fitting the dovetailed grooves in the core and another set of external segments, made wider at the top than at the bottom, placed on said core and having longitudinal dovetailed ribs fitting the dovetailed grooves in the core, the several segments of said set being longitudinally disposed about the core and abutted together, and the lower ends of the ribs abutted against the abutting shoulders at the lower ends of the grooves, substantially as described.

3. A grinding or crushing head comprising a conical core having a number of dovetailed grooves extending from the top to a point near the bottom each having an abutting shoulder at its lower end, a set of external segments, made wider at the bottom than at the top, placed on said core and having longitudinal dovetailed ribs fitting the dovetailed grooves in the core, and another set of external segments, made wider at the top than at the bottom, placed on said core, and having longitudinal dovetailed ribs fitting the dovetailed grooves of the core, the several segments of said set being alternately disposed about the core and abutted together, and the lower ends of the ribs abutted against the abutting shoulders at the lower ends of the grooves, and means for locking one set of external segments to the core, substantially as described.

4. A grinding or crushing head comprising a conical core having a number of dovetailed grooves extending from the top to a point near the bottom each having an abutting shoulder at its lower end, a set of external segments, made wider at the bottom than at the top, placed on said core and having longitudinal dovetailed ribs fitting the dovetailed grooves in the core, and another set of external segments, made wider at the top

than at the bottom, placed on said core and having longitudinal dovetailed ribs fitting the dovetailed grooves of the core, the several segments of said sets being alternately disposed about the core and abutted together, and the lower ends of the ribs abutted against the abutting shoulders at the lower ends of the grooves, and transversely-disposed keys interposed between the segments and core for locking said segments to the core, substantially as described.

5. A grinding or crushing head comprising a conical core having a number of dovetailed grooves extending from the top to a point near the bottom each having an abutting shoulder at its lower end, a set of external segments, made wider at the bottom than at the top, placed on said core and having longitudinal dovetailed ribs fitting the dovetailed grooves in the core, and another set of external segments, made wider at the top than at the bottom, placed on said core and having longitudinal dovetailed ribs fitting the dovetailed grooves of the core, the several segments of said sets being alternately disposed about the core and abutted together, and the lower ends of the ribs abutted against the abutting shoulders at the lower ends of the grooves, transversely-disposed keys interposed between the segments and core for locking said segments to the core, and means for holding said keys in place, substantially as described.

6. A grinding or crushing head comprising a conical core having a number of dovetailed grooves extending from the top to a point near the bottom each having an abutting shoulder at its lower end, key-receiving recesses crossing alternate grooves provided with entrances thereto, a set of external segments, made wider at the bottom than at the top, placed on said core and having longitudinal dovetailed ribs fitting the dovetailed

grooves of the core, and another set of external segments, made wider at the top than at the bottom, placed on said core and also having longitudinal dovetailed ribs fitting the dovetailed grooves of the core, the several segments of said sets being alternately disposed about the core and abutted together, and the lower ends of the ribs abutted against the abutting shoulders at the lower ends of the grooves, and transversely-disposed keys contained in said key-receiving recesses, substantially as described.

7. A grinding or crushing head comprising a conical core having a number of dovetailed grooves extending from the top to a point near the bottom each having an abutting shoulder at its lower end, key-receiving recesses crossing alternate grooves provided with entrances thereto, a set of external segments, made wider at the bottom than at the top, placed on said core and having longitudinal dovetailed ribs fitting the dovetailed grooves of the core, and another set of external segments, made wider at the top than at the bottom, placed on said core and also having longitudinal dovetailed ribs fitting the dovetailed grooves of the core, the several segments of said sets being alternately disposed about the core and abutted together, and the lower ends of the ribs abutted against the abutting shoulders at the lower ends of the grooves, transversely-disposed keys contained in said key-receiving recesses, and means for closing the entrances to said key-receiving recesses and for locking the keys in place, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

VOLNEY W. MASON, JR.

Witnesses:

B. J. NOYES,
J. W. DECROW.