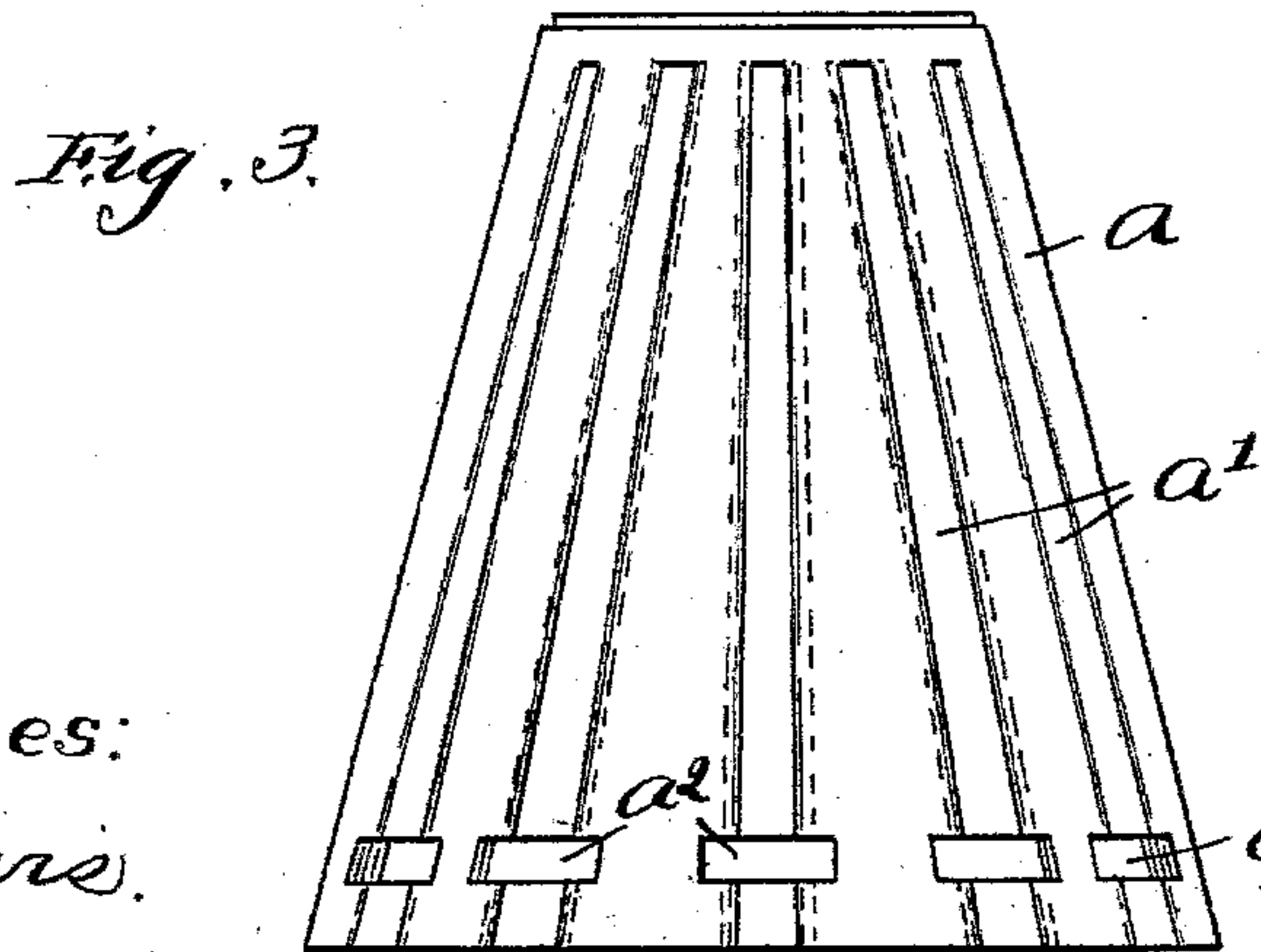
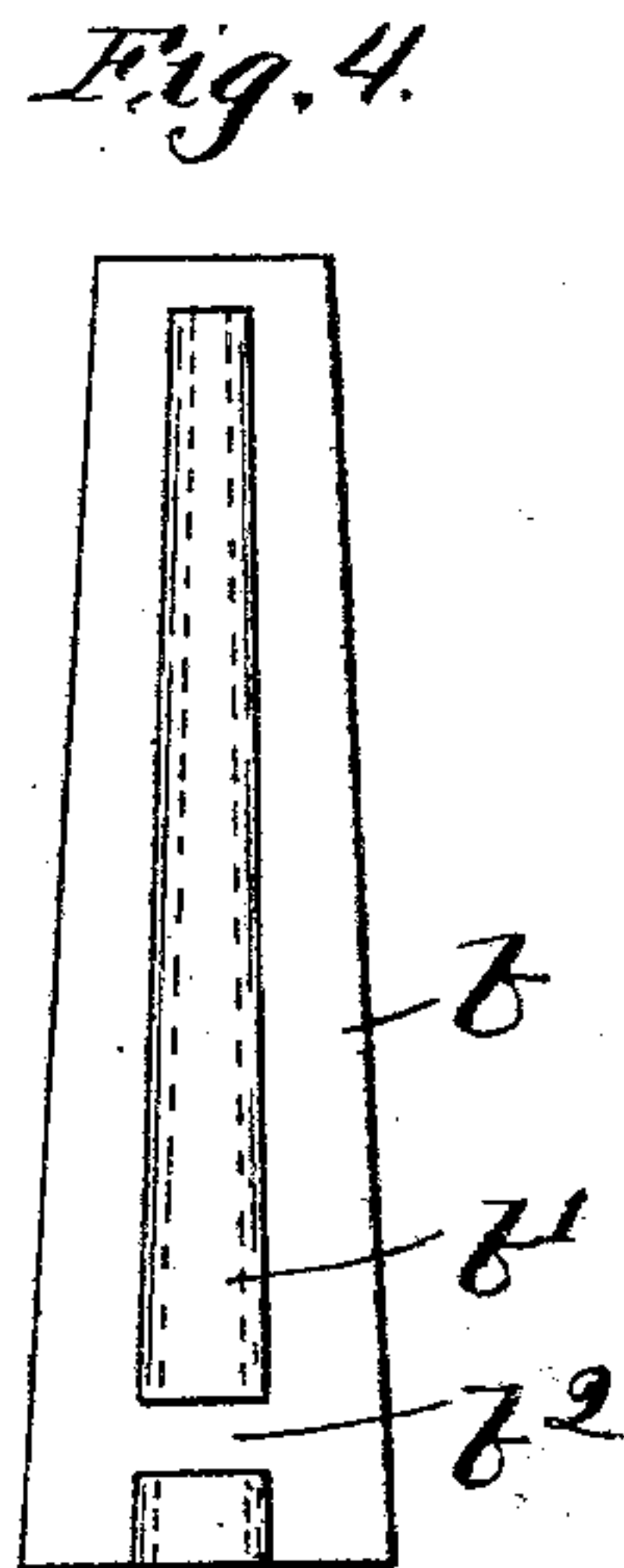
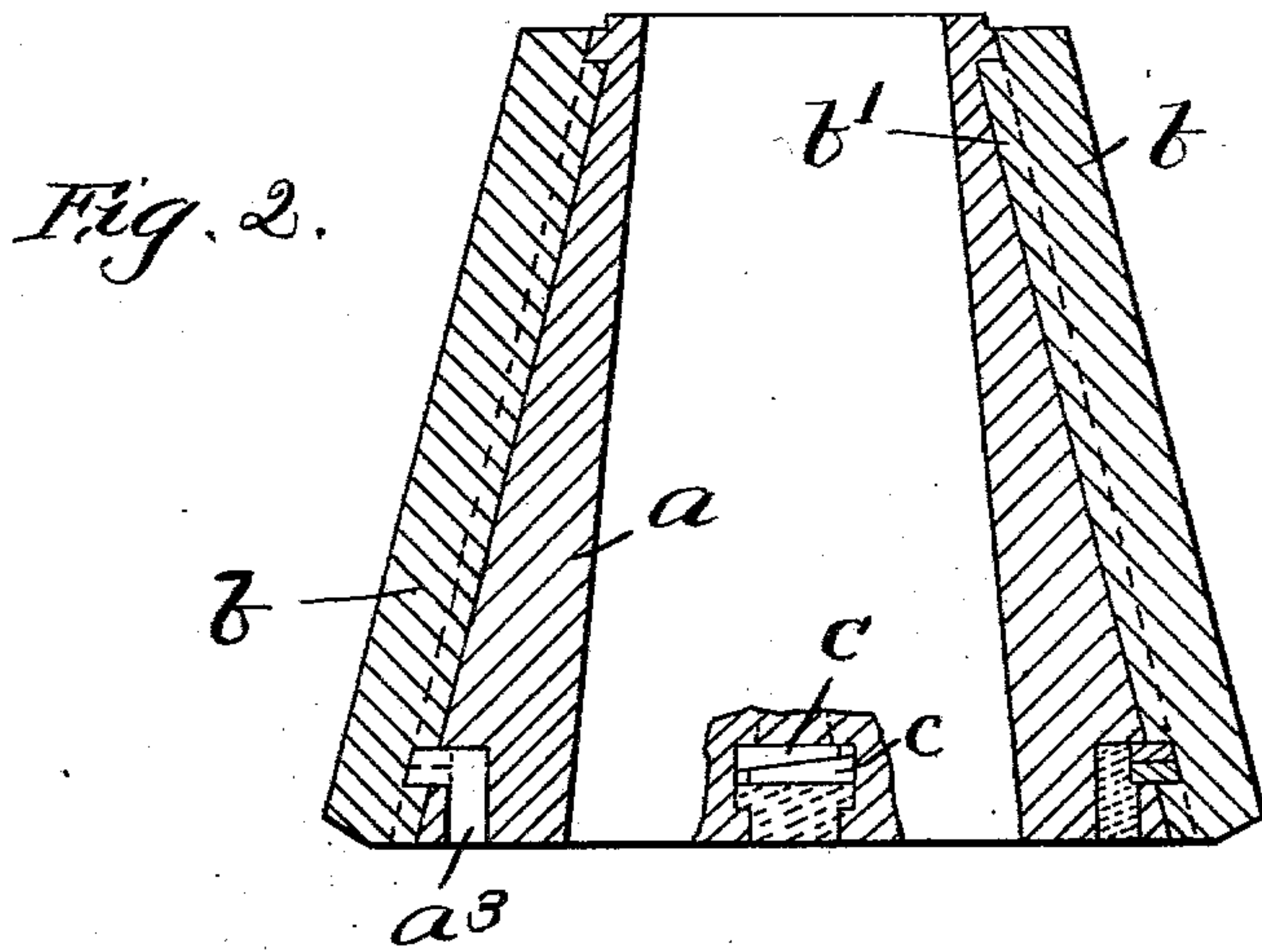
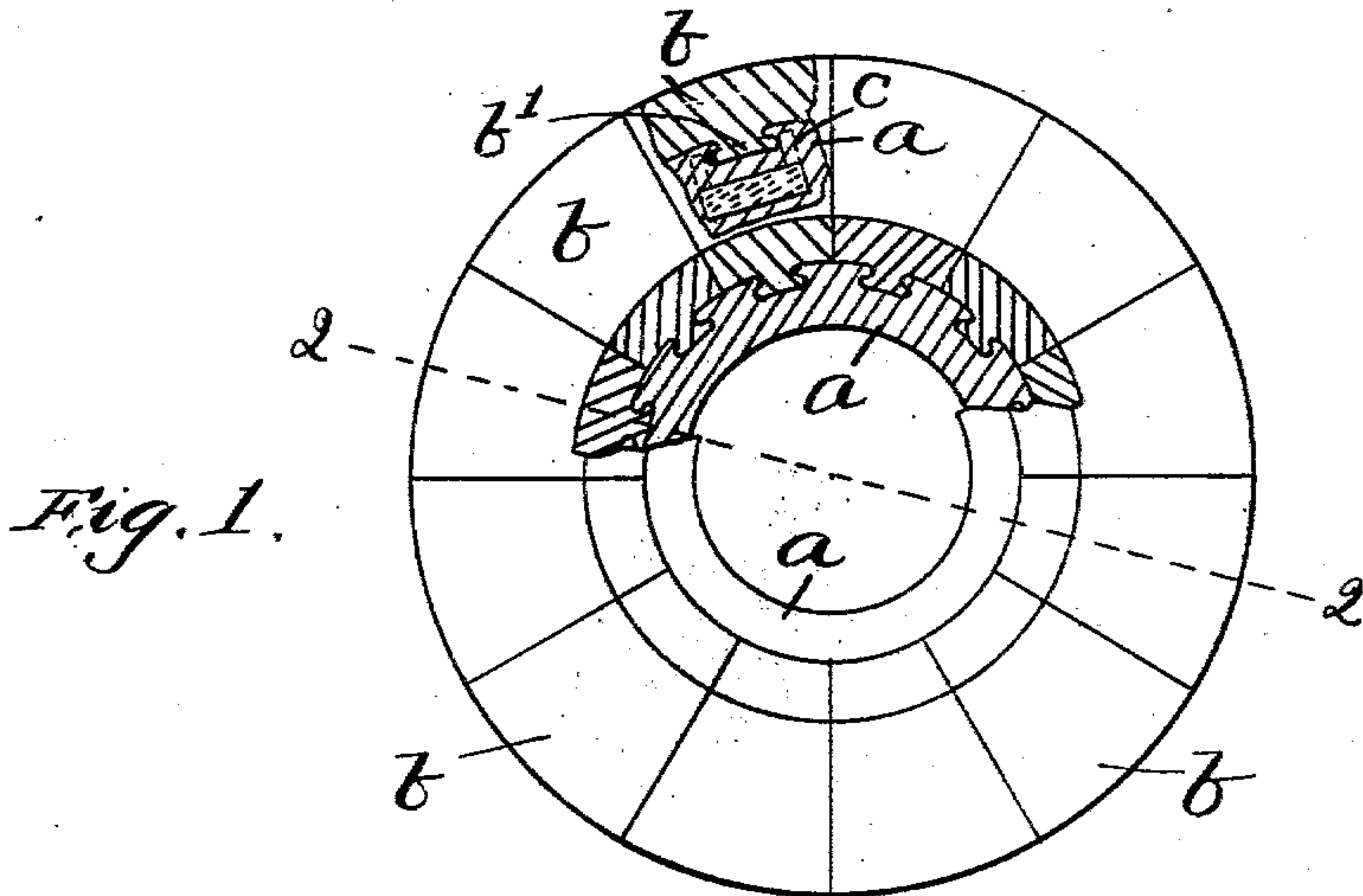


V. W. MASON, JR.
GRINDING OR CRUSHING HEAD.

APPLICATION FILED APR. 18, 1901.

NO MODEL.

2 SHEETS—SHEET 1.



Witnesses:
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No. 745,639.

PATENTED DEC. 1, 1903.

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2 SHEETS—SHEET 2.

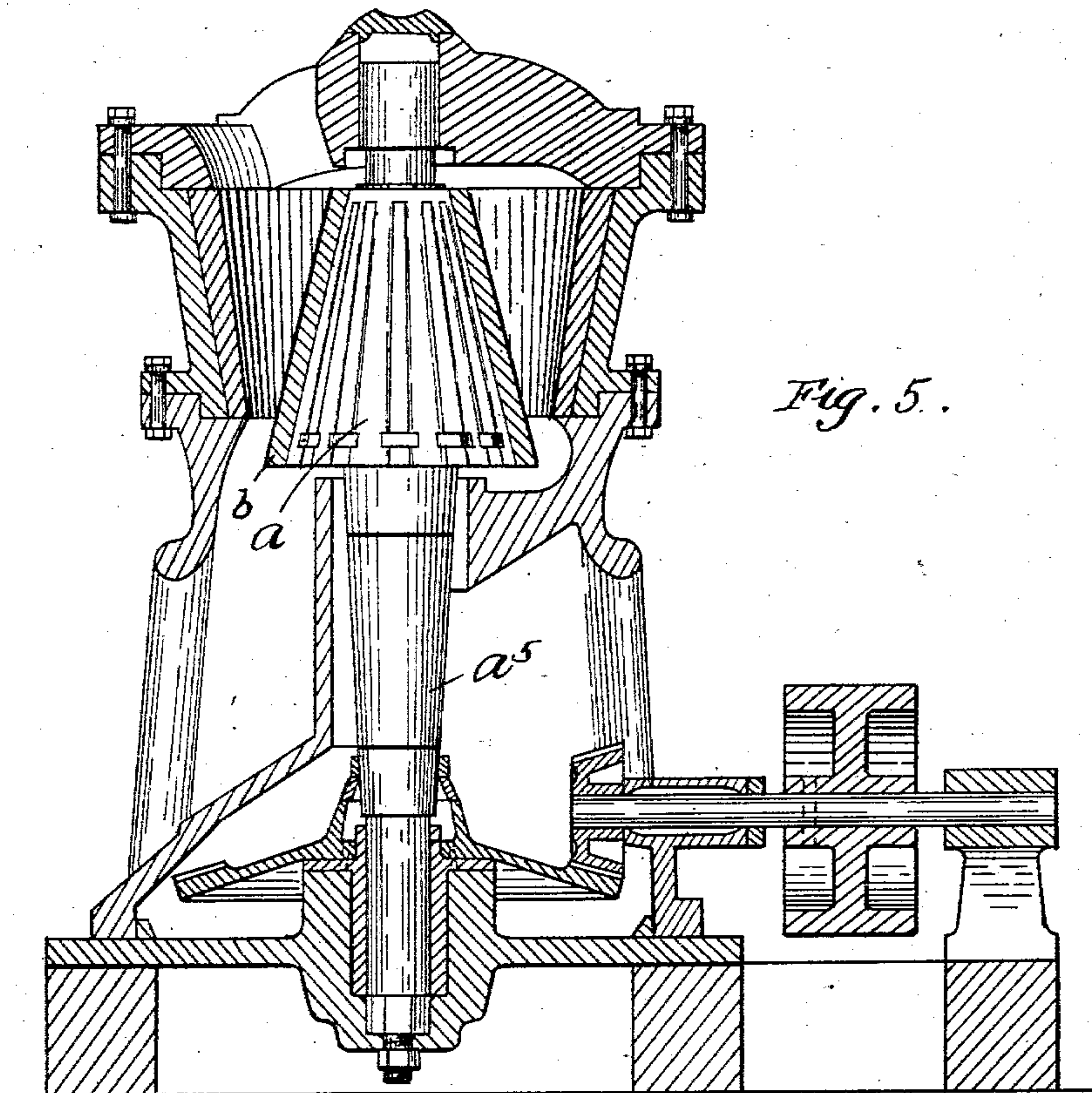


Fig. 5.

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UNITED STATES PATENT OFFICE.

VOLNEY W. MASON, JR., OF NEW YORK, N. Y.

GRINDING OR CRUSHING HEAD.

SPECIFICATION forming part of Letters Patent No. 745,639, dated December 1, 1903.

Application filed April 18, 1901. Serial No. 56,358. (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.

This invention has for its object to improve the construction of grinding or crushing heads especially adapted for gyratory crushers, although also adapted for other uses, to the end that the same may be constructed, essentially, of manganese steel and the wearing portions renewable whenever desired.

The invention consists in a head comprising a core and a number of external segmental plates mounted thereon and secured thereto to thereby completely surround the core, said core being composed of any ordinary steel or iron, and said segmental plates being composed of manganese steel, and also in means for securing said segmental plates to 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. 3 is a side elevation of the core. Fig. 4 is a detail of one of the segmental plates. Fig. 5 is a side elevation and partial section of the grinding and crushing head and with a sufficient portion of a crusher to illustrate my invention.

The core a , which is herein shown for the sake of illustrating my invention, is made conical and also hollow; yet it may be made of any other suitable shape and adapted to be mounted on a spindle or shaft a^5 . The core a is formed or provided with a plurality of like dovetailed grooves a' , extending from one end to a point near the opposite end—as, for instance, from the bottom to a point near the top—the upper end of each groove forming an abutting shoulder near the top of the core. These grooves may and preferably will be made a little wider at one end than at the other, being herein shown as made wider at the bottom than at the top. The core a is also formed or provided with a plurality of key-receiving recesses a^2 , one of which crosses each groove a' at substantially right angles at a point near the bottom or end of the core,

and said key-receiving recesses a^2 each have an entrance-passage leading thereto at the adjacent end of the core, as at a^3 , through which the keys may be introduced into or removed from the recesses.

b represents one of the external segmental plates, of which there may be any desired number, yet corresponding to the number of grooves a' . These segmental plates are made of manganese steel; yet of course they may be made of any other suitable material. These segmental plates are herein made wider at the bottom than at the top to specially adapt them to be placed on a conical core, and they are made as long as the core and are adapted to be placed upon the core, so as to surround or inclose it.

Each segment b is formed or provided on its inner side or face with a dovetailed rib b' , extending from the bottom to a point near the top to fit one of the dovetailed grooves a' in the core. At a point near the bottom or end of each segment b a key-receiving recess b^2 is formed or provided in the rib b' , which crosses said rib at substantially right angles and which is adapted to be disposed opposite one of the key-receiving recesses in the core when the segment is placed in position on the core. The dovetailed rib b' is made a little wider at the bottom or one end than at the top or other end.

The segmental plates b are driven onto the core, the ribs b' entering and snugly fitting the grooves a' , and the upper ends of said ribs abut against the shoulders at the upper ends of the grooves. Wedge-shaped keys c are inserted through the openings a^3 and properly placed in the key-receiving recesses in substantially horizontal position, being thereby transversely disposed relative to the ribs b' . Said keys lock the segments against displacement on the core. After the keys c have been introduced the openings a^3 are closed by pouring molten zinc or any other suitable metal thereinto, which serves to not only close said openings, but primarily to hold the keys c securely in place. The keys c are made wedge-shaped, so that they may be firmly secured in place in the key-receiving recesses by being crowded toward each other in the direction of their length before being locked in by the molten zinc. The

wedge-shaped keys are not alone depended upon to hold the circumferential plates against displacement, but when locked in position by the molten zinc they act effectively.

- 5 They are only firmly secured by friction until the molten zinc is introduced, when they will be positively held in the position that they occupy by the molten zinc thus introduced. In case it is desired to remove the
10 segmental plates or any of them the zinc and the keys will be removed and then the segmental plate or plates may be driven off the core.

I claim—

- 15 1. A grinding or crushing head comprising a core having a plurality of longitudinal dovetailed grooves therein which extend from the bottom to a point short of the top, and a corresponding number of external segmental
20 plates mounted thereon, having longitudinal dovetailed ribs projecting from the inner faces thereof, which extend from the bottom to a point short of the top, and which enter said grooves, and a locking device for each seg-
25 mental plate, substantially as described.

2. A grinding or crushing head comprising a core having a plurality of longitudinal dovetailed tapering grooves therein, and a corresponding number of external segmental plates
30 thereon, having longitudinal dovetailed tapering ribs projecting from the inner faces thereof, which extend from the bottom to a point short of the top, and which enter said grooves, and an independent locking device
35 for each segmental plate, substantially as described.

3. A grinding or crushing head comprising a core having a plurality of dovetailed grooves therein, each groove having a key-receiving
40 recess crossing it at right angles, and a plurality of external segmental plates mounted on said core having dovetailed ribs projecting from the inner faces thereof, adapted to enter said grooves and having key-receiving
45 recesses crossing said ribs at points opposite the key-receiving recesses in the core, a removable key contained in each key-receiving recess in the core for locking the segmental
50 plates against displacement, and a passage leading to each key-receiving recess for the introduction and removal of the keys, substantially as described.

4. A grinding or crushing head comprising a core having a plurality of dovetailed grooves
55 therein, a corresponding number of external

segmental plates mounted on said core having dovetailed ribs projecting from the inner faces thereof adapted to enter said grooves, a removable transversely-disposed key interposed between each segmental plate and the
60 core for locking said segmental plates separately against displacement, and passages for the introduction and removal of said keys, substantially as described.

5. A grinding or crushing head, comprising a
65 core having a plurality of dovetailed grooves therein and a corresponding number of external segmental plates mounted on said core having dovetailed ribs adapted to enter said grooves, a transversely-disposed key interposed between each segmental plate and the
70 core for locking said segmental plates against displacement, passages for the introduction and removal of the keys, and means for holding said keys in place, substantially as described.
75

6. A grinding or crushing head, comprising a core having a plurality of dovetailed grooves therein, a key-receiving recess crossing said
80 groove and a passage leading to each recess, a plurality of segmental plates having dovetailed ribs to fit said grooves, and a key-receiving recess crossing each rib at a point opposite the key-receiving recess in the core, keys
85 contained in the key-receiving recess for locking the segmental plates in place on the core, and means for holding the keys in place, substantially as described.

7. A grinding or crushing head, comprising a core having a plurality of dovetailed grooves
90 therein, each groove having a key-receiving recess crossing it at right angles and a plurality of external segmental plates mounted on said core having dovetailed ribs projecting from the inner faces thereof adapted to
95 enter said grooves having key-receiving recesses crossing said ribs at points opposite the key-receiving recesses in the core, a pair of wedge-shaped keys contained in each recess for locking said segmental plates against
100 displacement, and means for holding said 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,
JOHN W. DECROW.