

No. 673,212.

Patented Apr. 30, 1901.

W. S. MATHER.

COMBINED SHIELD, SHAKER, AND CONVEYER FOR CRUCIBLES.

(Application filed Aug. 9, 1900.)

(No Model.)

2 Sheets—Sheet 1.

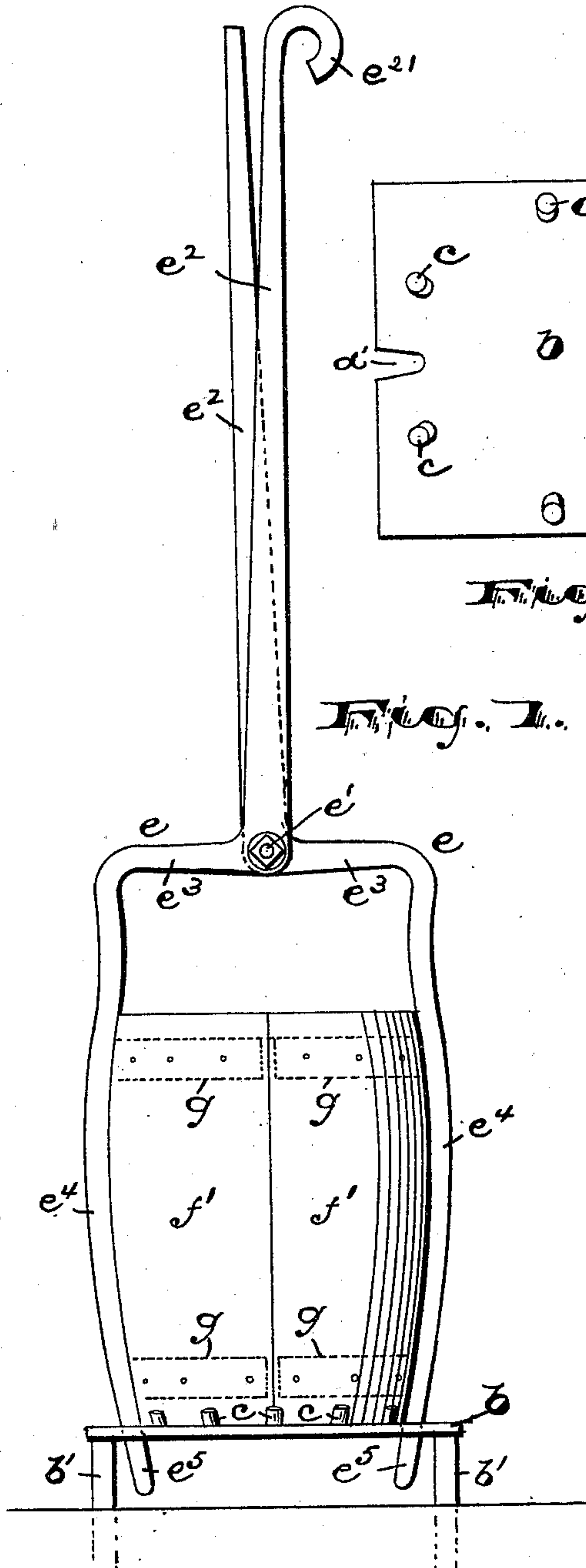


Fig. 1.

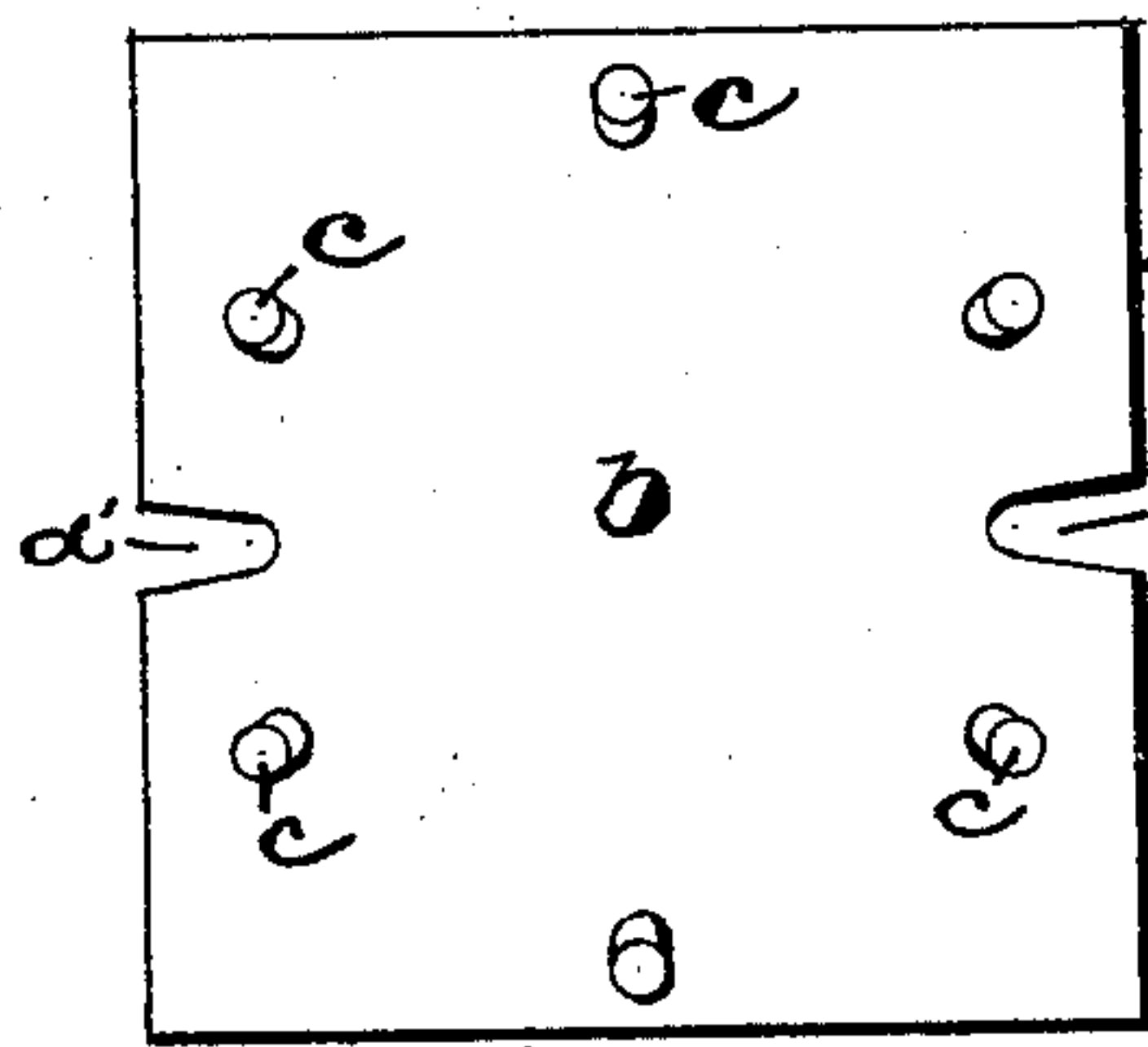


Fig. 3.

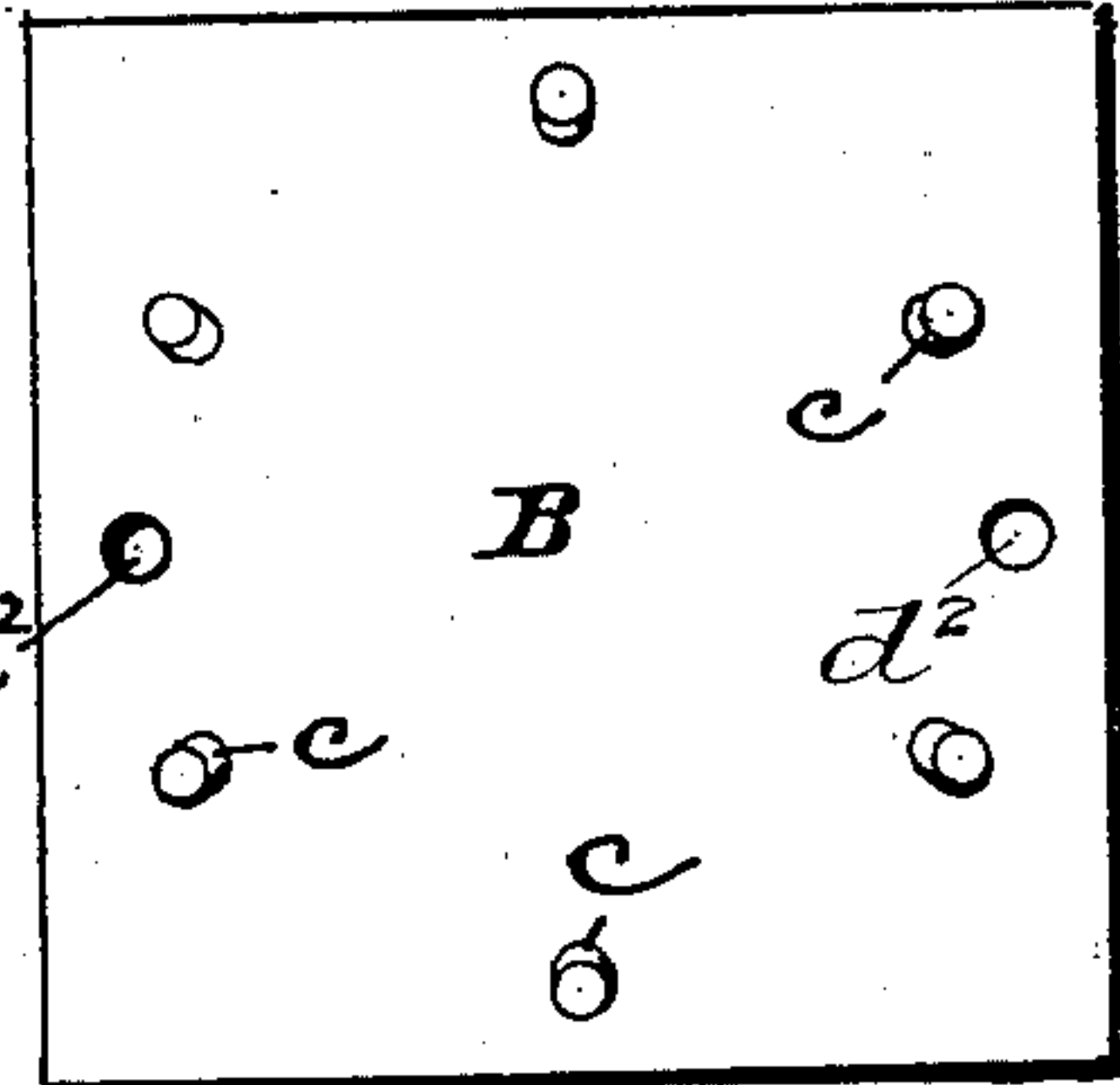


Fig. 4.

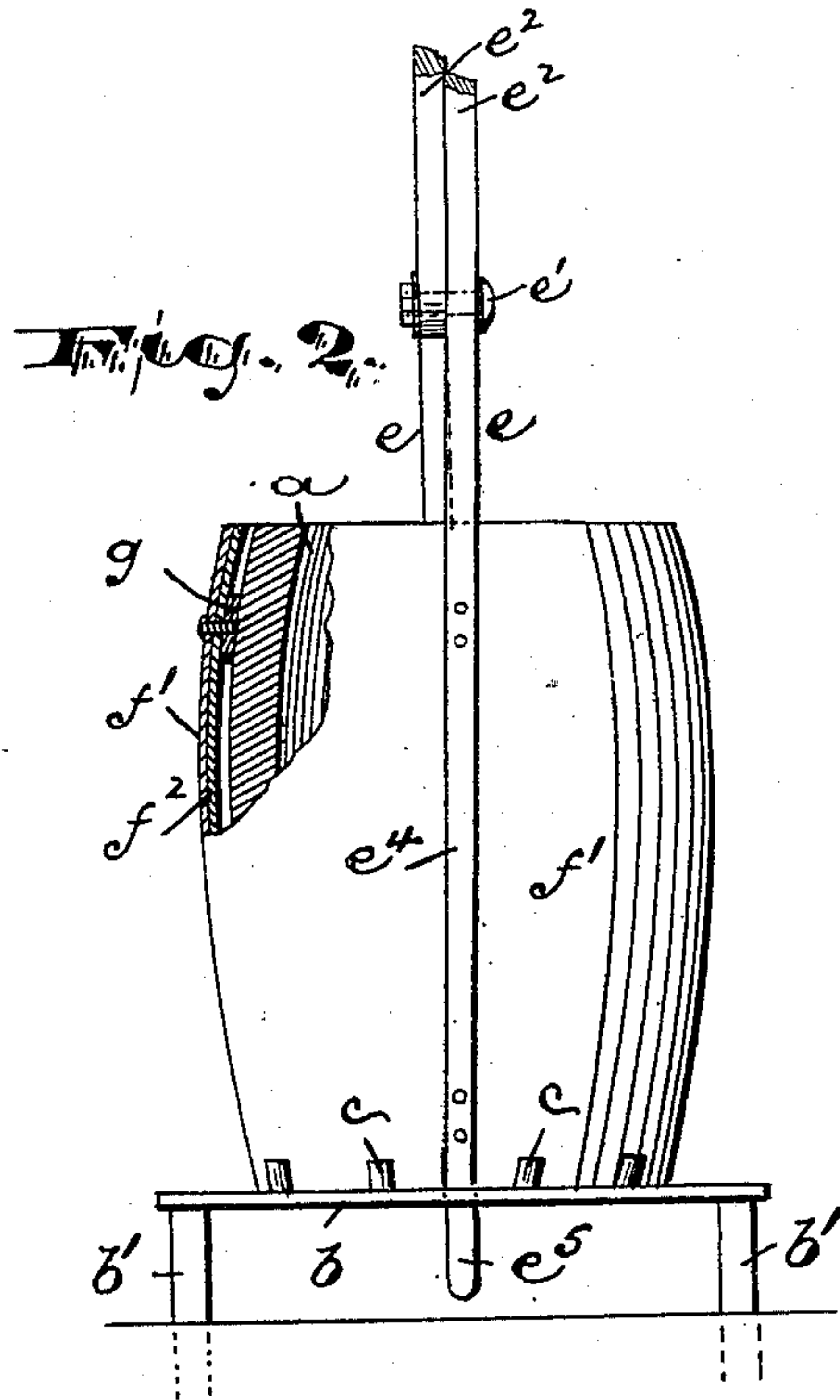


Fig. 2.

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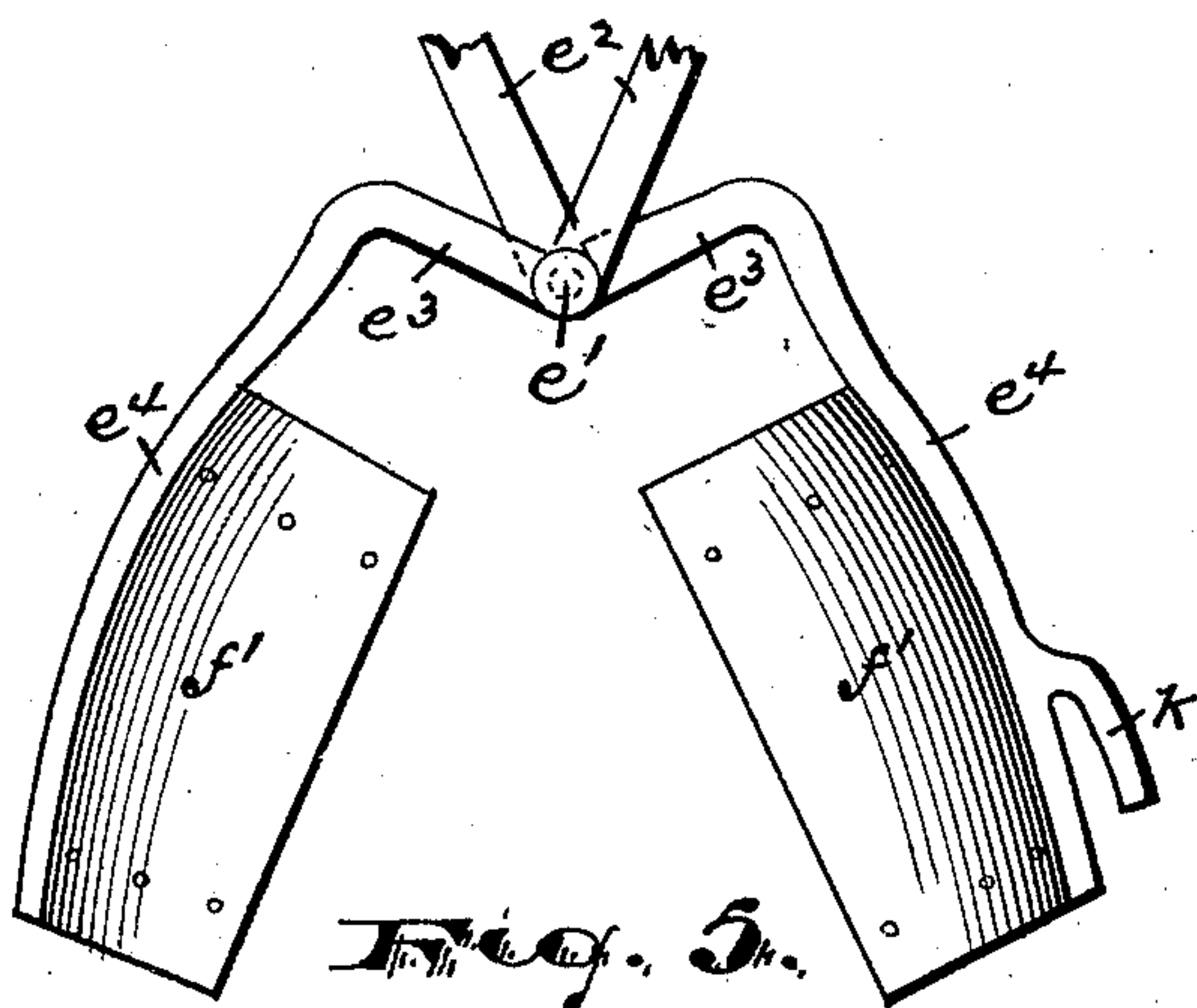


Fig. 5.

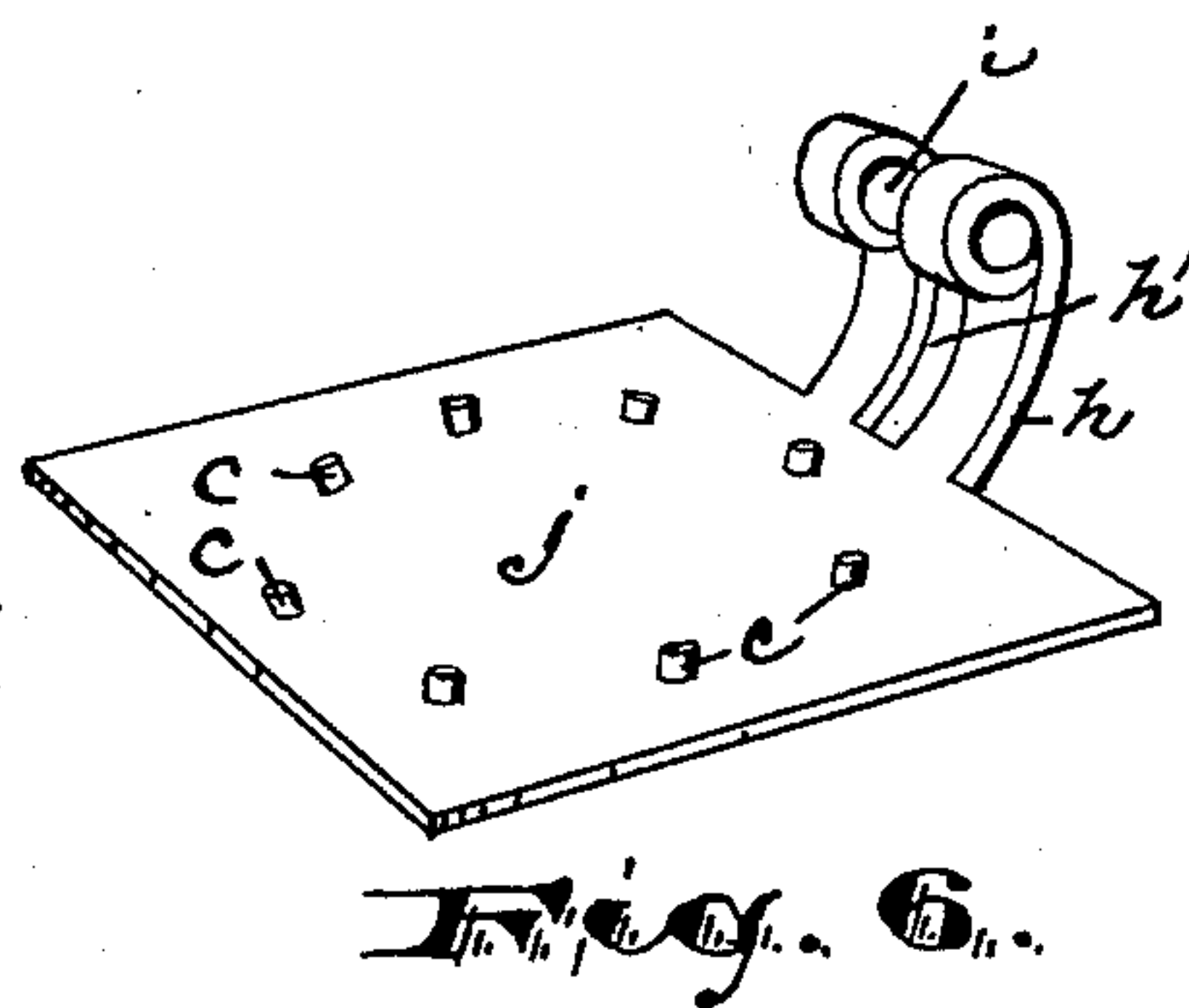


Fig. 6.

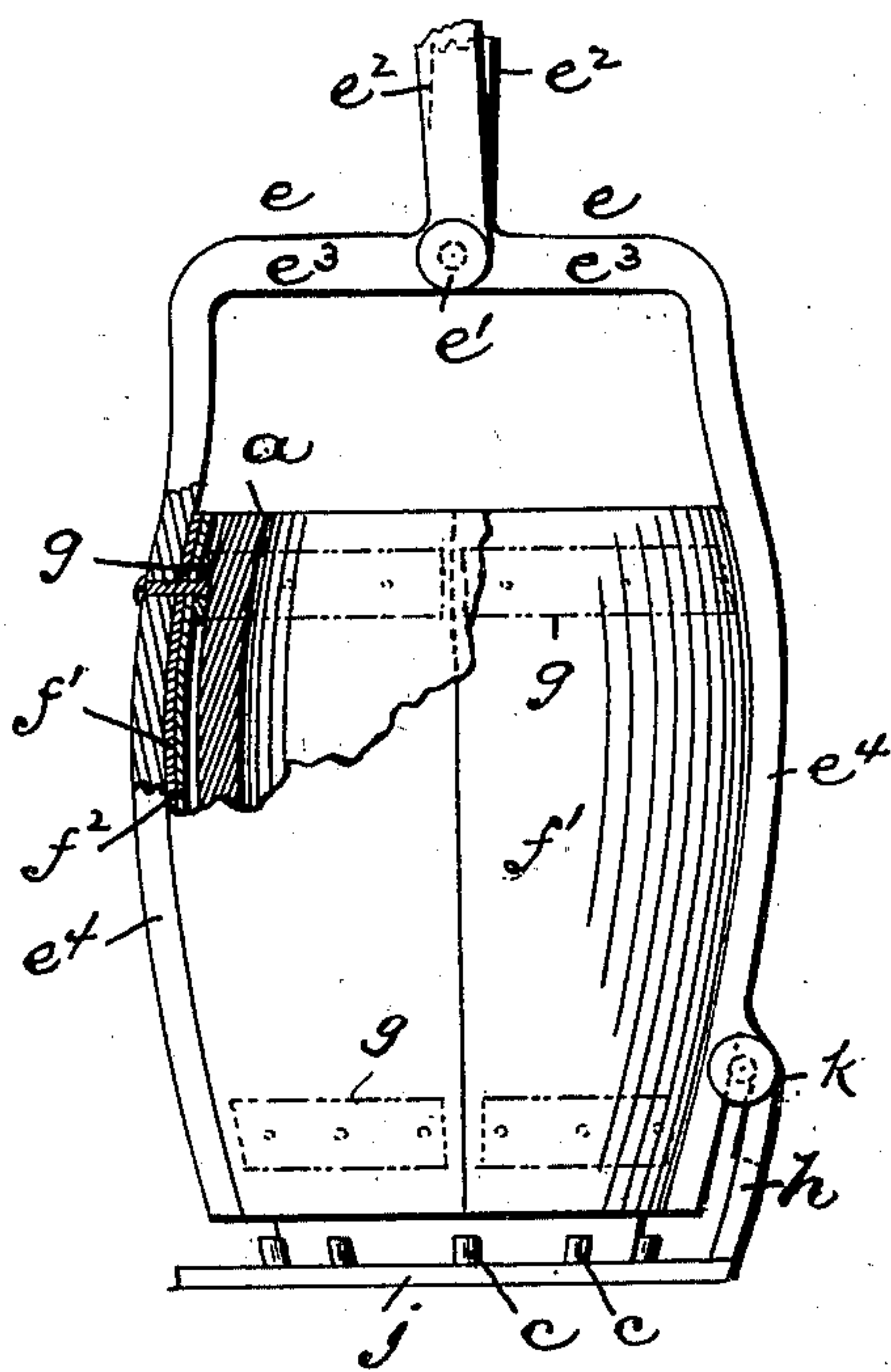


Fig. 7.

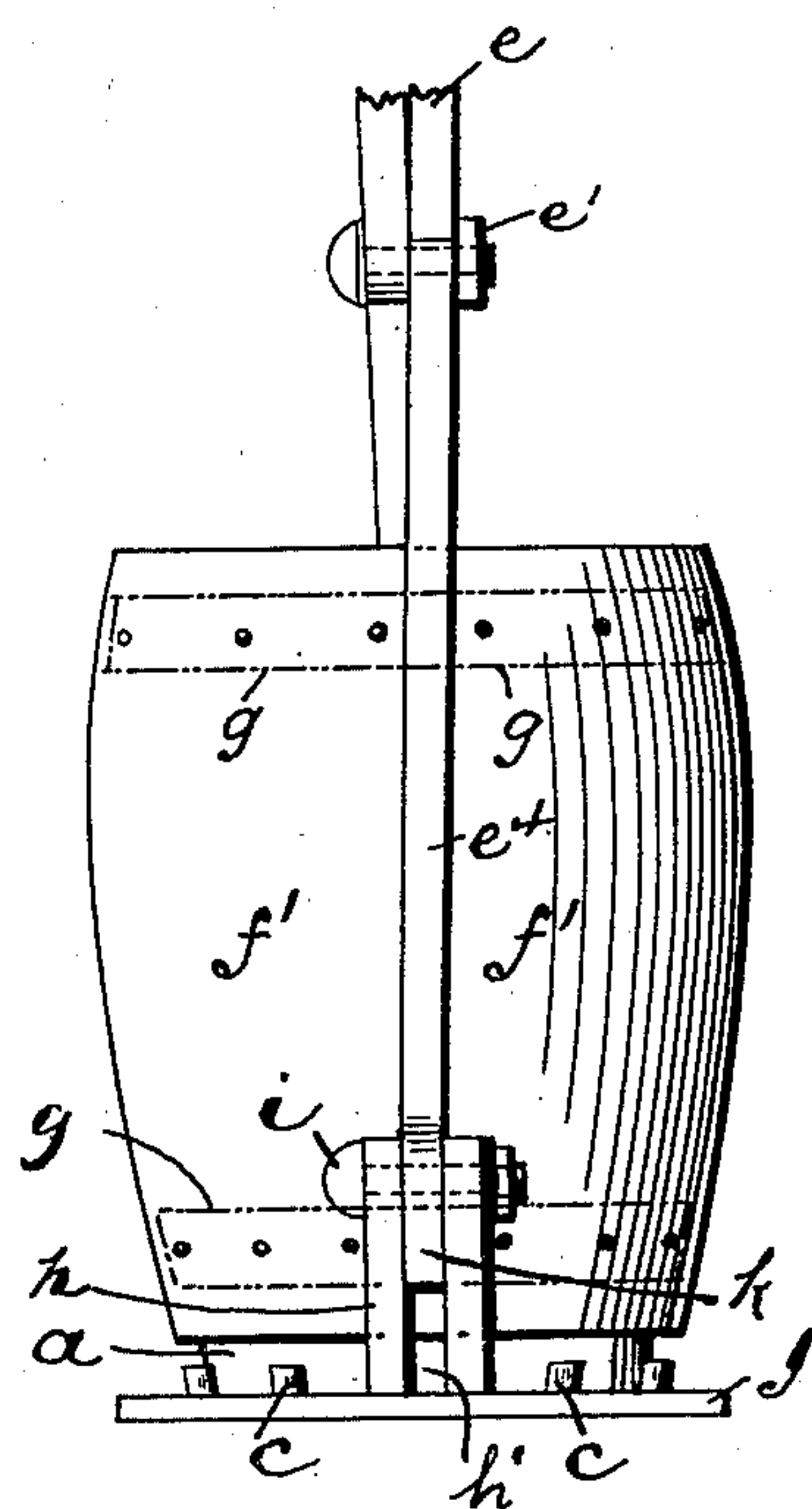


Fig. 8.

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# UNITED STATES PATENT OFFICE.

WILLIAM S. MATHER, OF NEWARK, NEW JERSEY.

## COMBINED SHIELD, SHAKER, AND CONVEYER FOR CRUCIBLES.

SPECIFICATION forming part of Letters Patent No. 673,212, dated April 30, 1901.

Application filed August 9, 1900. Serial No. 26,351. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM S. MATHER, a citizen of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in a Combined Shield, Shaker, and Conveyer for Crucibles; and I 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, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

This invention relates to that class of crucible-shakers illustrated by my prior patents, No. 650,648, issued May 29, 1900, and my application, Serial No. 14,390, filed April 26, 1900, and allowed June 25, 1900; and the objects of the present invention are to prevent in some measure the cooling of the crucible, to relieve the workmen from the radiated heat from the crucible, to enable the crucible to be held more firmly, to facilitate the handling and moving of the same, and to secure other advantages and results, some of which may be referred to hereinafter in connection with the description of the working parts.

The invention consists in the combined shield, shaker, and conveyer for crucibles and in the arrangements and combinations of parts of the same, all substantially as will be hereinafter set forth and finally embraced in the clauses of the claim.

Referring to the accompanying drawings, in which like letters of reference indicate corresponding parts in each of the several views, Figure 1 is a side view of my improved shaker as applied to a crucible. Fig. 2 is an edge view of the same, partly in section. Fig. 3 is a plan of the base-plate, and Fig. 4 shows a modification of the same. Fig. 5 shows a modified form of the device in open position. Fig. 6 is a perspective view of a base-plate for the construction shown in Fig. 5. Fig. 7 is a side view of the modified shaker applied to a crucible and being partly in section, and Fig. 8 is an edge view of the same.

In said drawings, *a* indicates a crucible, and *b* the preferred form of base-plate upon

which said crucible is stood in operation. Said base-plate *b* comprises a flat piece of sheet metal supported above the ground by legs *b'* and provided at its upper surface with a circle of pins *c*, adapted to stand around the base of the crucible and prevent lateral displacement of the same. Two opposite side edges of the base-plate are notched, as at *d'*, Fig. 3, or perforated, as at *d''*, Fig. 4, to receive the lower extremities of the jaws of the implement and hold said lower ends fixed while the upper end is vigorously oscillated in operating the device.

The combined shield, shaker, and conveyer proper preferably comprises members *e e*, hinged upon a common pivot, as at *e'*. Above said pivot the two members form grasping-handles *e''*, and below the pivot they are bent outward, as at *e'''*, at substantially right angles to points distant from each other by about the diameter of the crucible and are then bent downward at right angles to form jaws *e''''*, adapted to lie at opposite sides of the crucible. To the inner sides of said jaws are secured curved protecting-plates *f*, conforming to the shape of the crucible, and each being in height about equal to the height of the crucible and extending in horizontal direction half-way around the same. Said plates are of sheet-metal body portion *f'*, lined next to the crucible with asbestos *f''* or the like, the two layers being held together by transverse cleats *g* at the inner side, which are riveted to the layers *f'* *f''* and to the jaws *e''''* of the tongs. These cleats serve to hold the asbestos from close contact with the hot crucible. At the same time they give rigidity to the curved plates. The protecting-plates may extend clear down to the base-plate *b*, the pins *c* being set outwardly far enough to admit the same between themselves and the crucible, or the plates may be cut off, so as to not extend down to the tops of the pins, as shown in Figs. 7 and 8. The jaws extend at their lower ends beyond the protecting-plates and form projecting tips *e''''''*, adapted to enter the notches or perforations in the base-plate *b* and afford a fulcrum for swinging the device to shake the crucible, as will be understood. Preferably both of the



jaws  $e^4$  enter the base-plate, as thus described; but, if desired, only one can so enter and the other terminate short of the base-plate.

In Figs. 5, 6, 7, and 8 I have illustrated a modification of construction in which the jaws  $e^4$  of the implement both terminate short of the base-plate  $j$  and said base-plate has no sockets, but is instead provided at one side with an upward extension  $h$ , slotted from its upper end downward, as at  $h'$ , and having a pin  $i$  across said slot.

One jaw  $e^4$  of the implement is provided at its outer side with a finger  $k$ , extending out from the jaw and then downward in the same general direction therewith, as shown in Fig. 5. When, therefore, the implement is applied to the crucible, the finger  $k$  hooks over the pin  $i$  of the base-plate extension  $h$  and lies in the slot  $h'$ , supporting the implement and at the same time permitting its shaking movement without any danger of dislodgment.

It will be understood that the curved protecting-plates  $f$  of my device in use surround the hot crucible and shield the workmen from the heat as well as prevent the cooling of the crucible to a low temperature. Again, the pivotal members  $e$  of the device connecting said protecting-plates enable the crucible to be shaken in an appropriate manner while inclosed by the plates, and, furthermore, the pivoted members  $e$  enable the crucible to be lifted and conveyed from place to place by the device, since the application of the lifting force at the upper ends of the handles  $e^2$  has been found in practice to force the plates  $f^2$  so firmly against the crucible that the same may be lifted from its base-plate without danger of dropping. To facilitate this conveying action of my invention, I may provide one or both of the handles  $e^2$  with an eye  $e^{21}$  at the extremity and adapted to be engaged by any suitable lifting means.

I thus combine in a single device a shield, a shaker, and a conveyer for crucibles and provide an implement which can be used to great advantage in smelting crucible-steel and similar processes.

Having thus described the invention, what I claim as new is—

1. In a crucible-shaker, the combination with means for receiving the base of the crucible and holding it against lateral movement, of a combined shield and shaking-lever, having jaws pivoted together and provided with curved plates adapted to inclose the crucible, substantially as set forth.

2. In a crucible-shaker, the combination with means for holding the base of the crucible from lateral movement, of a shaking-lever having jaws pivoted together and provided with inwardly-facing curved plates having a lining of non-conductive material and adapted to inclose the crucible, and means for fulcrumally supporting said lever upon the base-plates, substantially as set forth.

3. In a crucible-shaker, the combination with means for holding the base of the crucible from lateral movement, of a shaking-lever having jaws pivoted together and adapted to lie at the side of the crucible, and protecting-plates at the inner sides of said jaws curved in conformity to the crucible and adapted to together inclose the crucible when the jaws are closed, substantially as set forth.

4. In a crucible-shaker, the combination with a base-plate holding the bottom of the crucible from lateral movement, of a shaking-lever having handles extending away from the crucible and jaws for grasping the crucible at opposite sides, oppositely-disposed protecting-plates carried by the said jaws and adapted to inclose the crucible, and said shaking-lever being fulcrumed upon the base-plate, substantially as set forth.

5. In a crucible-shaker, the combination of a base-plate adapted to support the crucible and hold its base against lateral movement, a shaking-lever having jaws pivoted together and adapted to grasp the crucible longitudinally of its length, and curved protecting-plates on the grasping-faces of said jaws and adapted to cover the sides of the crucible, substantially as set forth.

6. In a crucible-shaker, the combination with a base-plate having sockets, of a shaking-lever having jaws pivoted together and adapted to grasp the crucible at opposite sides and extend longitudinally thereof, the extremities of said jaws entering the sockets in the base-plate and the jaws being provided back from said extremities with curved protecting-plates adapted to embrace the crucible, substantially as set forth.

7. In a crucible-shaker, the combination of a base-plate having projections to prevent lateral movement of the bottom of the crucible, and a shaking-lever extending upward from said plate in the general direction of the crucible and comprising members hinged together above the crucible, the ends above the hinge forming handles and those below being bent into jaws adapted to extend downward at the sides of the crucible, said lever being fulcrumed on the base-plate and its jaws having semicylindrical protecting-plates adapted to inclose the crucible, substantially as set forth.

8. In a crucible-shaker, the combination with a base-plate, of a combined shield, shaking-lever, and conveyer, comprising pivoted members having jaws adapted to grasp the crucible, and protecting-plates upon said jaws for inclosing the crucible, one of said jaws having fulcrumal bearings on the base-plate and one of the lever members having an eye to receive lifting means, substantially as set forth.

9. In a crucible-shaker, the combination with a shaking-lever comprising members pivoted together and having jaws adapted to



grasp the crucible, of heat-shields or protect-  
ing-plates carried upon said jaws and being  
curved inwardly toward each other to inclose  
the crucible, said shields having a sheet-  
5 metal body portion, a non-conductive lining  
and cleats holding said lining from direct  
contact with the crucible, substantially as set  
forth.

In testimony that I claim the foregoing I  
have hereunto set my hand this 31st day of 10  
July, 1900.

WILLIAM S. MATHER.

Witnesses:

CHARLES H. PELL,  
C. B. PITNEY.