

No. 670,279.

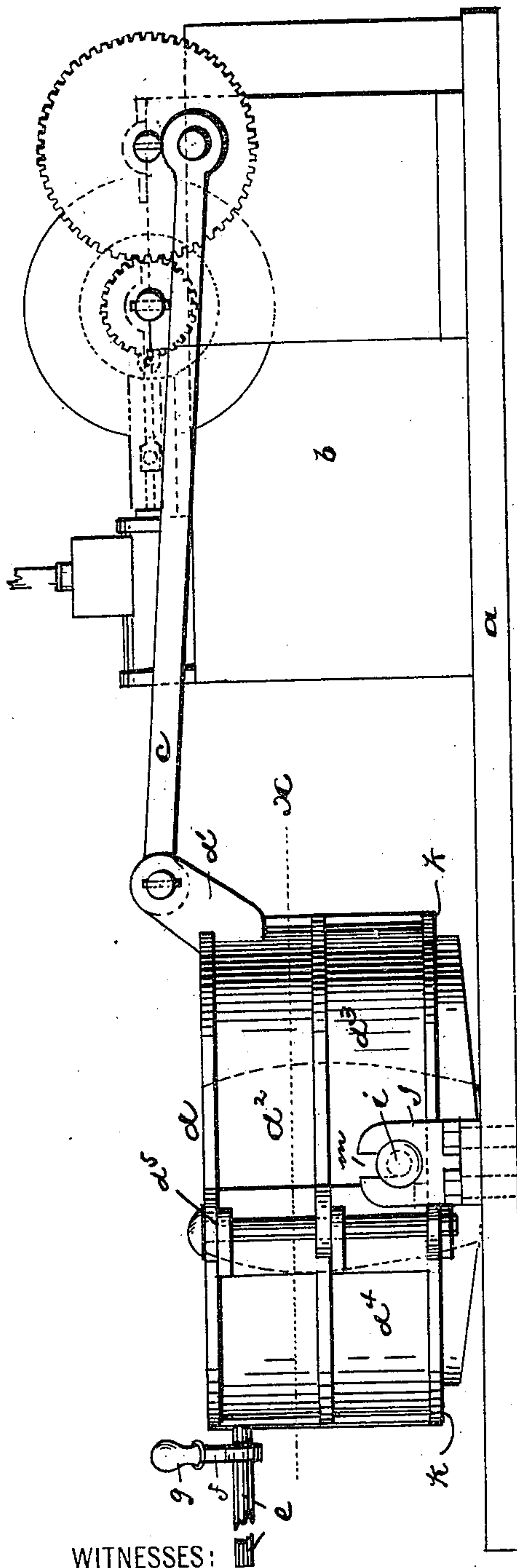
Patented Mar. 19, 1901.

J. ILLINGWORTH.
CRUCIBLE SHAKER.

(Application filed Apr. 27, 1900.)

2 Sheets—Sheet 1

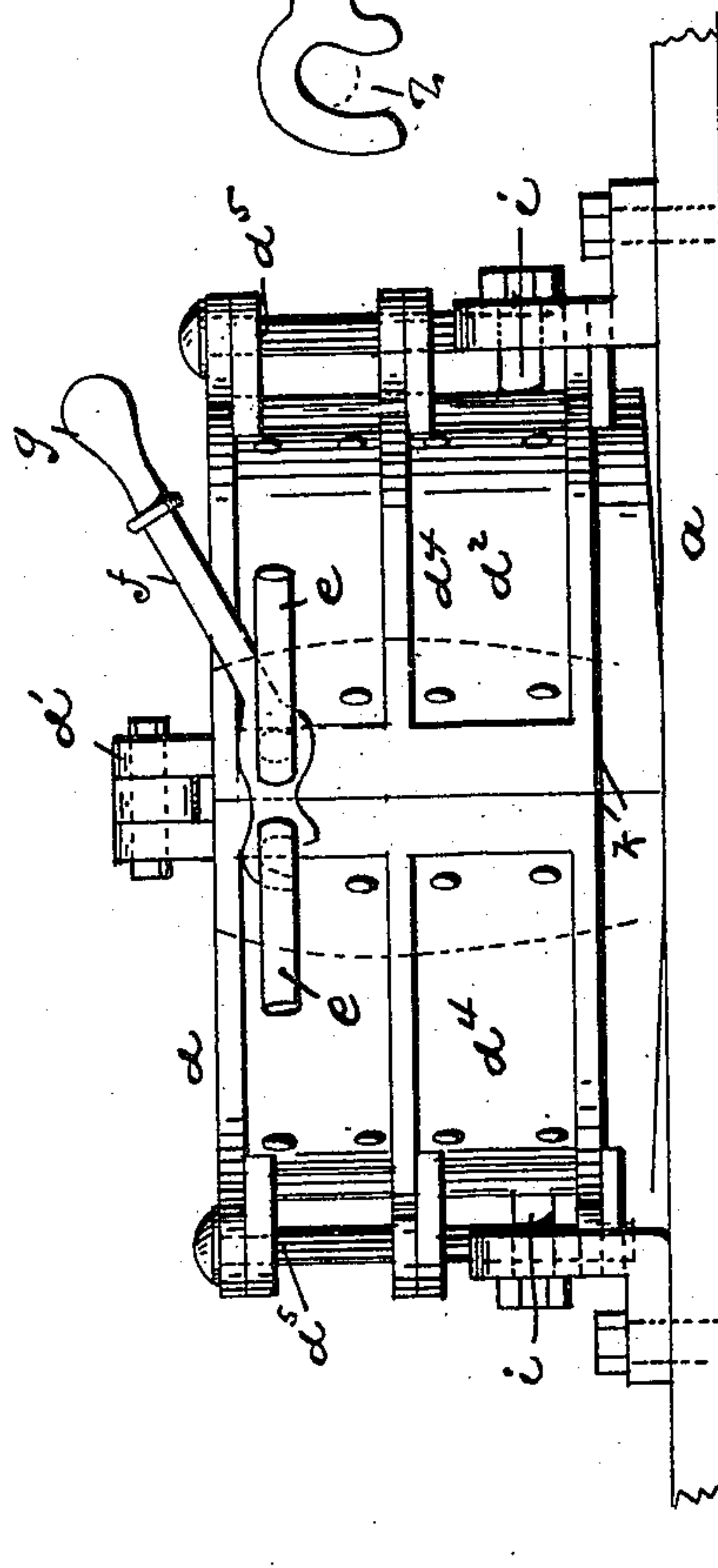
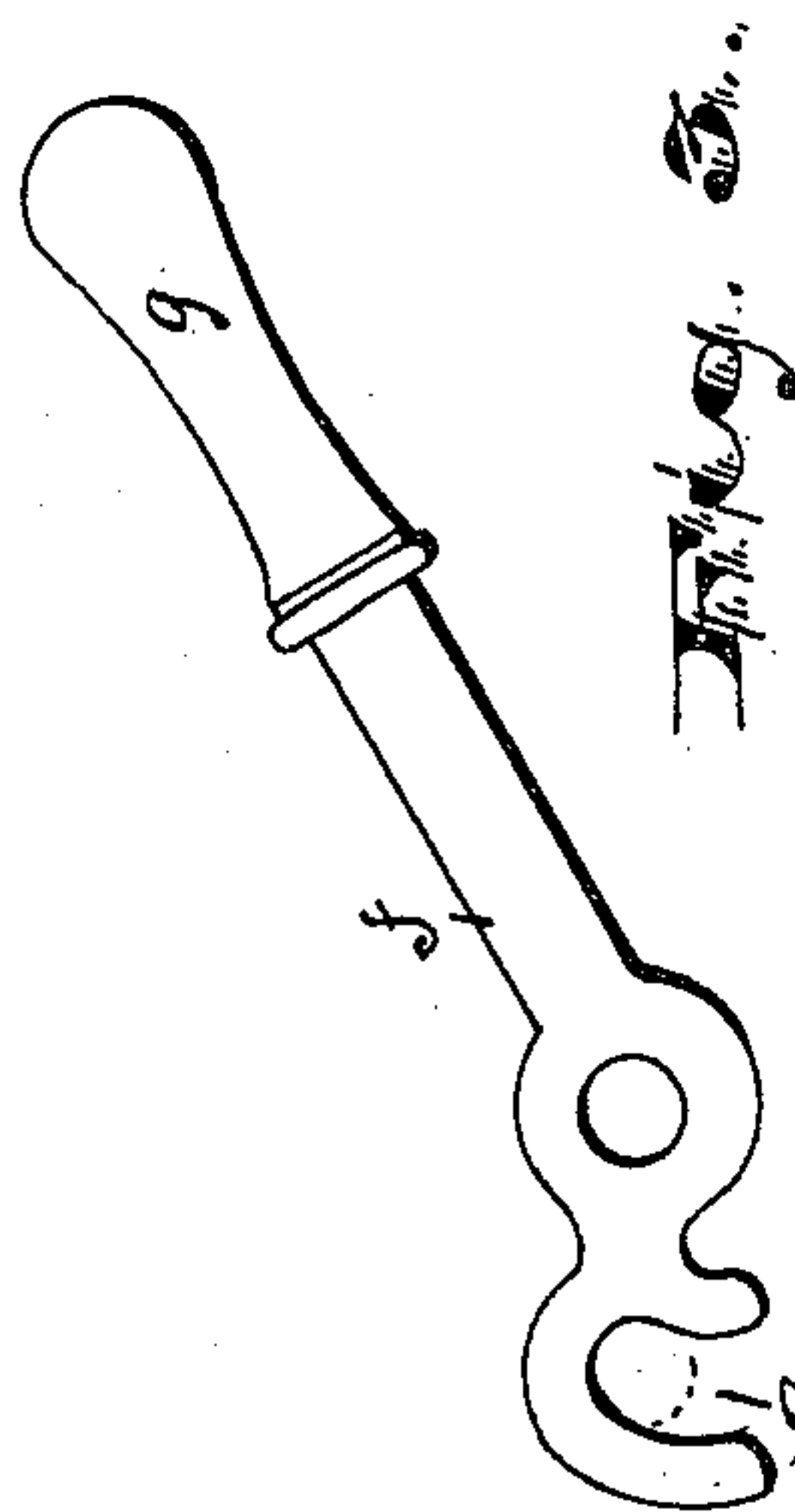
(No Model.)



WITNESSES:

Henry King.

Russell M. Everett.



INVENTOR:

John Wingworth,

BY

BY Drake Co.

ATTORNEYS

No. 670,279.

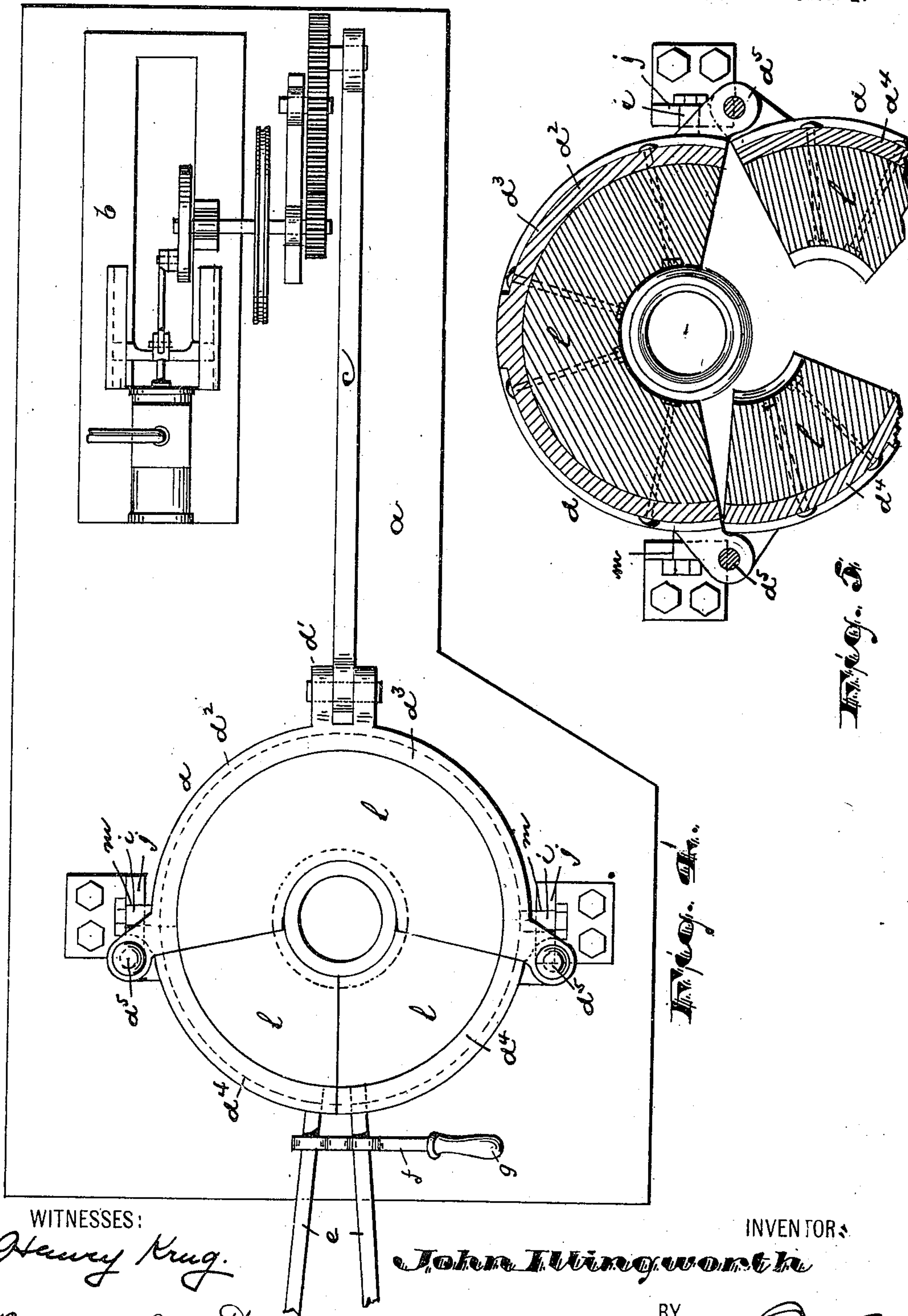
Patented Mar. 19, 1901.

J. ILLINGWORTH.
CRUCIBLE SHAKER.

(No Model.)

(Application filed Apr. 27, 1900.)

2 Sheets—Sheet 2.



WITNESSES:
Henry Krug.
Russell M. Everett.

John Illingworth

INVENTOR:

BY

Drake & Co.
ATTORNEYS

UNITED STATES PATENT OFFICE.

JOHN ILLINGWORTH, OF NEWARK, NEW JERSEY.

CRUCIBLE-SHAKER.

SPECIFICATION forming part of Letters Patent No. 670,279, dated March 19, 1901.

Application filed April 27, 1900. Serial No. 14,533. (No model.)

To all whom it may concern:

Be it known that I, JOHN ILLINGWORTH, 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 Crucible-Shakers; 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 certain improvements in that class of crucible-shaking apparatus represented by the one shown in my prior application, filed in the United States Patent Office on the 10th day of February, 1900, Serial No. 4,710, the objects of the present improvements being to secure a more effective shaking of the pots or crucibles, whereby the settling of the charge of scrap metal, &c., within said crucible will be facilitated, to enable the pot or crucible to be inserted in and removed from the non-conductive inclosure with greater convenience and ease, 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 improved crucible-shaker 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 elevation of the improved device. Fig. 2 is a front view of the same. Fig. 3 is a detail view of the door-locking device. Fig. 4 is a plan of my improvement; and Fig. 5 is a horizontal section of the non-conductive crucible-holder, the section-line being taken at line *x* of Fig. 1.

In said drawings, *a* indicates a suitable bed-plate upon which is arranged a small engine *b*, of any suitable construction, to which engine is connected, by means of a connecting-rod *c*, a non-conductive crucible holder and shaker *d*, the latter being provided with an arm

d' at its rear, formed integral with the outer metallic casing *d*² of the said holder and extending upward therefrom, as is shown in Fig. 1. The said casing *d*² is of heavy cast metal and comprises a large rear section *d*³, which is preferably made somewhat larger than a semicircle, as indicated in Fig. 5, and two smaller sections, segments, or doors *d*⁴ *d*⁴, which are hinged, as at *d*⁵, to the larger section at opposite sides of the holder and are adapted to close together to form a complete incasement. These sections are preferably provided with long handles *e*, extending out horizontally at the front of the device, whereby the doors or segments *d*⁴ may be opened or closed with convenience. Upon one of the said handles *e* is pivoted a lever-like catch or lock *f*, provided at one end with a handle *g* and at its opposite extremity having an open recess *h*, Fig. 3, adapted to receive the other handle *e*, the said catch *f* serving thus to couple the two handles when the doors are closed and hold the same thus closed, as will be understood.

By simply pressing down upon the handle *g* the catch will be released from one of the handles and permit the doors to be opened with convenience.

Near the bottom of the larger section *d*³ of the case the same is provided with heavy pivots or trunnions *i*, which may be cast integral with the said section. Said trunnions *i* extend horizontally out from the case and are adapted to enter in slotted ways or bearing-blocks *j*, the said bearing-blocks being bolted down upon the floor or bed-plate *a* or otherwise fixed in any suitable manner. The said trunnions and bearings for the same are so disposed and related that the casing will be held up from the bed-plate or floor two inches, more or less, in any ordinary practice, so that when the said case is oscillated on its pivotal centers by means of the engine *b*, connecting-rod *c*, and arm *d'* the rear and forward parts of the case at its lower edge, as at *k*, will strike against the floor or bed-plate or other suitable fixture and give the desired jar to the casing, whereby the charge of scrap within the crucible will be thoroughly shaken and caused to settle within the pot or crucible. The trunnions *i* being disposed within vertical slots *m* of the bearings *j*, when the said

case strikes at k upon the bed-plate under the impulse given by the connecting-rod the said trunnions will be lifted somewhat in the slots, and when the rocking movement of the case is reversed the said trunnions will drop back against the bottom of the slots, and this also will tend to increase the irregular jarring action, which further settles the scrap within the pot or crucible. Thus by reciprocatingly rocking the connecting-rod c by means of the engine and connections the case is caused to oscillate in its bearings and alternately is caused to strike the bed-plate, floor, or other fixture, first at the rear and then at the front, at each reciprocation the trunnions being slightly raised and lowered in the slots, thus very effectively jarring the shaker or holder and the crucible, repeatedly doing so, so that the metal is very thoroughly shaken.

The trunnions and bearings j serve to hold the casing in proper relative position to the motive device, so that the action of the connecting-rod will be effective without forcing the casing away from the engine or otherwise out of its proper relative position.

The interior of the casing is provided with a very heavy lining of asbestos l , which at its interior surface is made to conform to the outer surface of the pot, so that when the said segmental doors are closed the said pot or crucible will be held firmly in position within the casing and the heat will be prevented from radiating from the crucible.

The non-conductive lining extends downward below the bottom edges of the casing, as indicated in Fig. 1, so that said pot will be thoroughly protected from an outerradiation, and yet the asbestos will not interfere with the irregular rocking action of the casing.

In the drawings, and particularly in Figs. 1 and 2, this lining is shown as extending below the strike-bearings k of the casing d^2 a distance sufficient to interfere with the striking operations described; but it will be understood that such interference will in practice be brief, for in the operation of the shaker the soft lining will soon give way, so that the striking and settling of the contents of the crucible will be properly effected.

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

1. The combination with a crucible-shaker having trunnions and a supporting bed-plate having bearings formed thereon for said trunnions and strike-bearings disposed near said trunnion-bearings to be engaged by the crucible-shaker or the crucible therein to effect a jarring of the crucible and a settling of its charge of metal, said shaker or holder being arranged in relation to said strike-bearings, and adapted, when reciprocated, to effect a jarring engagement with said strike-bearings, of an engine, and connections adapted to rock said crucible-shaker reciprocatingly and cause a settling engagement or strike at the end of the reciprocal movements, substantially as set forth.

2. The combination with the floor or supporting bed-plate having fixed strike-bearings, and a reciprocating crucible shaker or holder adapted to be rocked to and fro and strike upon said bearings and effect a positive concussion by which the charge of scrap metal is settled within the crucible, of an engine and connections adapted to rock said shaker or holder to and fro and cause an engagement or strike against the fixed bearings at the end of each reciprocation, substantially as set forth.

3. The combination with the bed-plate, upon which is arranged an engine, and bearing-blocks j , of a crucible-holder having trunnions arranged in said bearing-blocks and having at one side doors d^1, d^1 , and at the opposite side an arm, extending upward from said holder, a rod connecting said holder and engine, handles e, e , extending horizontally from the doors and a hand-lever pivoted upon one handle and adapted to catch the other to hold the doors closed, substantially as set forth.

4. The combination with a bed-plate, an engine and slotted bearing-blocks arranged upon said bed-plate, of a crucible holder or shaker arranged between said slotted bearing-blocks and having trunnions arranged in the slots of said blocks, said holder having doors and handles and a hand-lever holding said handles together, substantially as set forth.

5. The combination with a bed having vertically-slotted bearing-blocks, of a crucible-holder having trunnions arranged in the slots of said blocks and means for reciprocating the holder and effecting an engagement of the latter with the said bed and a rising and falling of the said trunnions in said slots, whereby an increased jarring effect is produced and the charge is more quickly caused to settle in the crucible, substantially as set forth.

6. The combination with the crucible-holder having doors adapted to extend horizontally more or less completely around the crucible and to conform approximately to the sides of the crucible to hold the said crucible therein during the shaking operation, said doors having handles extending out therefrom, of a hand-lever pivoted on one of said handles and adapted to catch the other to hold the doors closed about the crucible and means for shaking the crucible-holder, substantially as set forth.

7. The combination with the bed-plate, having crucible-holder-supporting bearings, of a crucible-holder having means for supporting the holder upon said bearings a little above the body of the bed-plate, and at the opposite sides of the bottom of said holder lying sufficiently close to said plate to strike upon said bed-plate, when turned on said bearings, said holder having connections for reciprocally turning said holder and causing it to strike said plate, substantially as set forth.

8. The improved crucible-shaker herein described comprising a casing, consisting of a rear section and two smaller sections hinged at opposite ends of the first, the three sections
5 horizontally encircling the crucible, means for holding the smaller sections together, reciprocating means adapted to rock the said casing, and impact-surfaces adapted to be engaged by the casing at the ends of its rock-
10 ing movements, whereby the contents of the pot are settled therein, substantially as set forth.

9. The improved crucible-shaker herein described, comprising a casing consisting of a
15 rear section having an upwardly-extending

arm d' , segmental doors joined to the opposite ends of the said rear section and extending forward therefrom and at the free ends provided with locking or holding means for holding said doors closed together, and recip- 20
rocating means connected with said arm d' , substantially as set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 17th day of April, 1900.

JOHN ILLINGWORTH.

Witnesses:

CHARLES H. PELL,
C. B. PITNEY.