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6 SHEETS—SHEET 1.

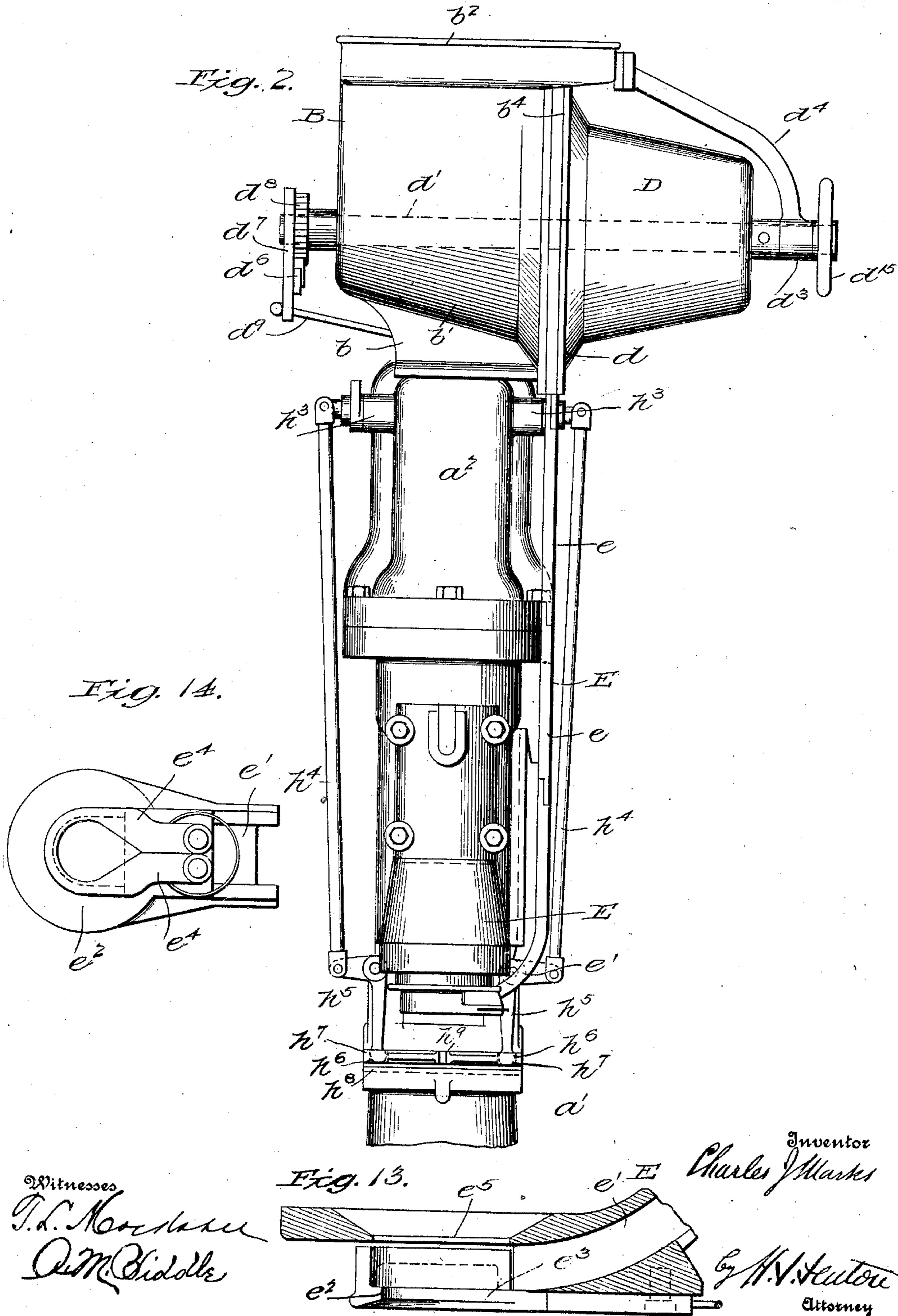


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C. J. MARKS.
MACHINE FOR SEALING BOTTLES.
APPLICATION FILED MAY 28, 1908.

Patented Apr. 25, 1911.

6 SHEETS—SHEET 2.



Witnesses
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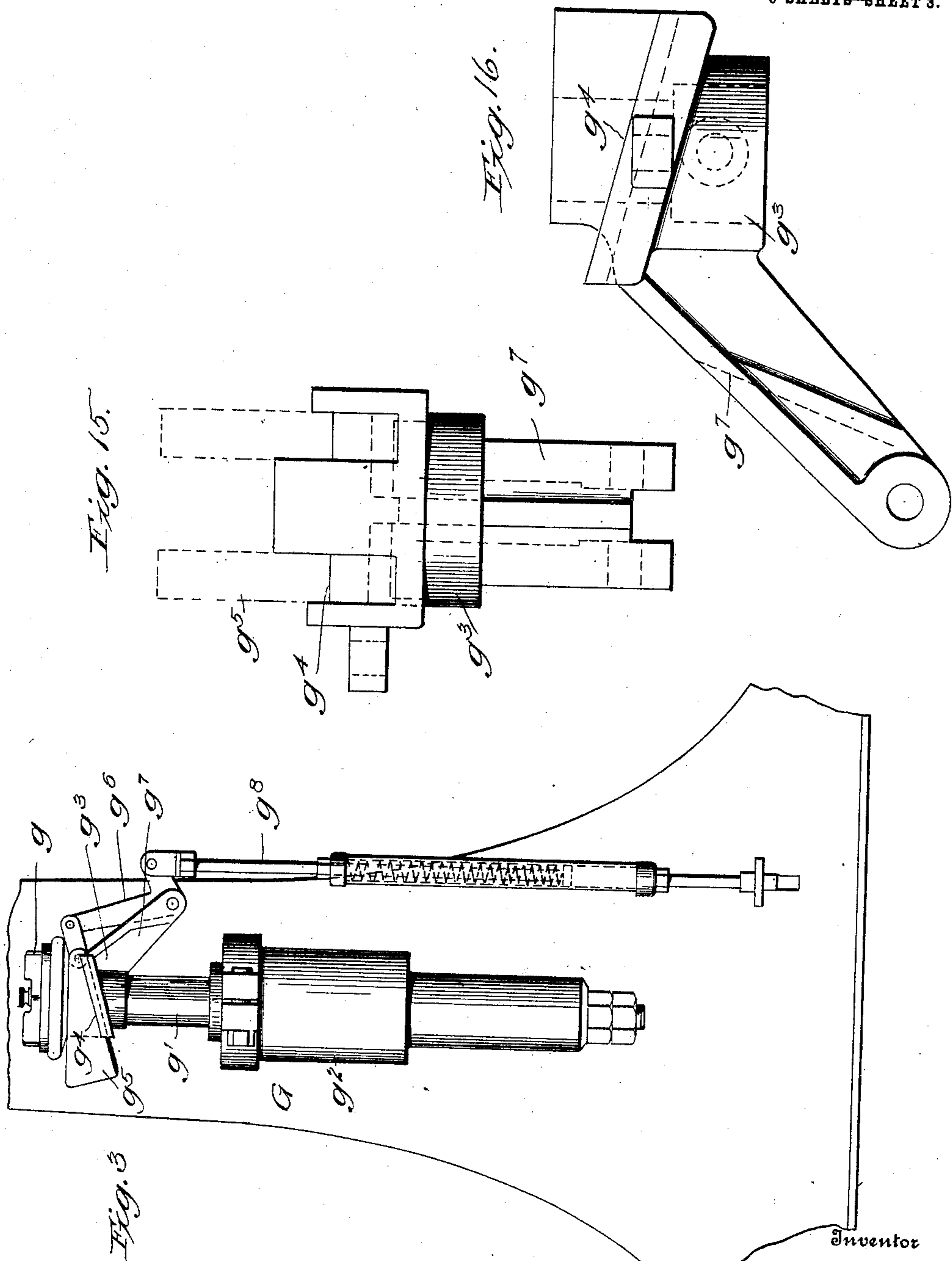
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6 SHEETS-SHEET 3.



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Fig. 5.

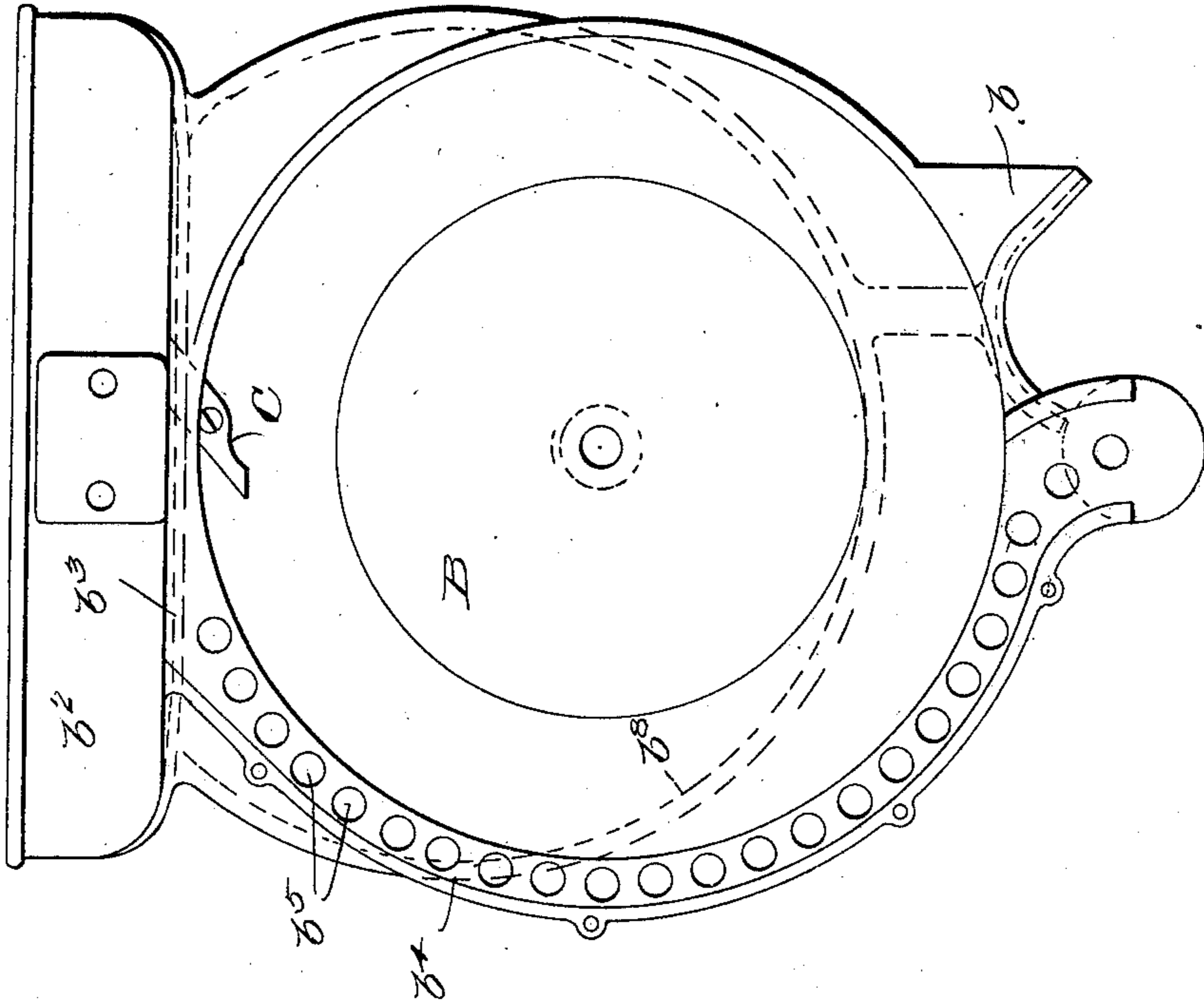
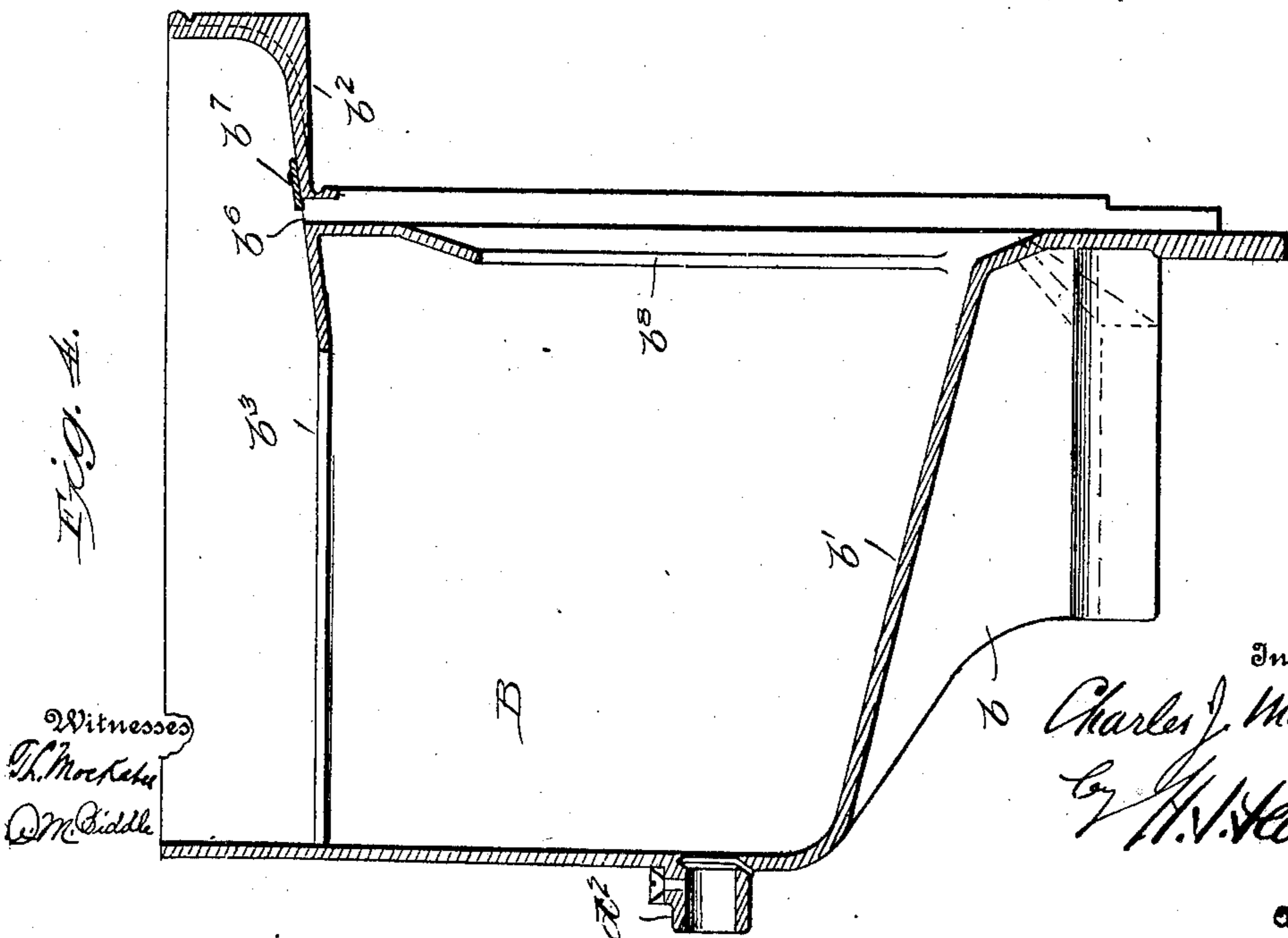


Fig. 4.



Witnessed
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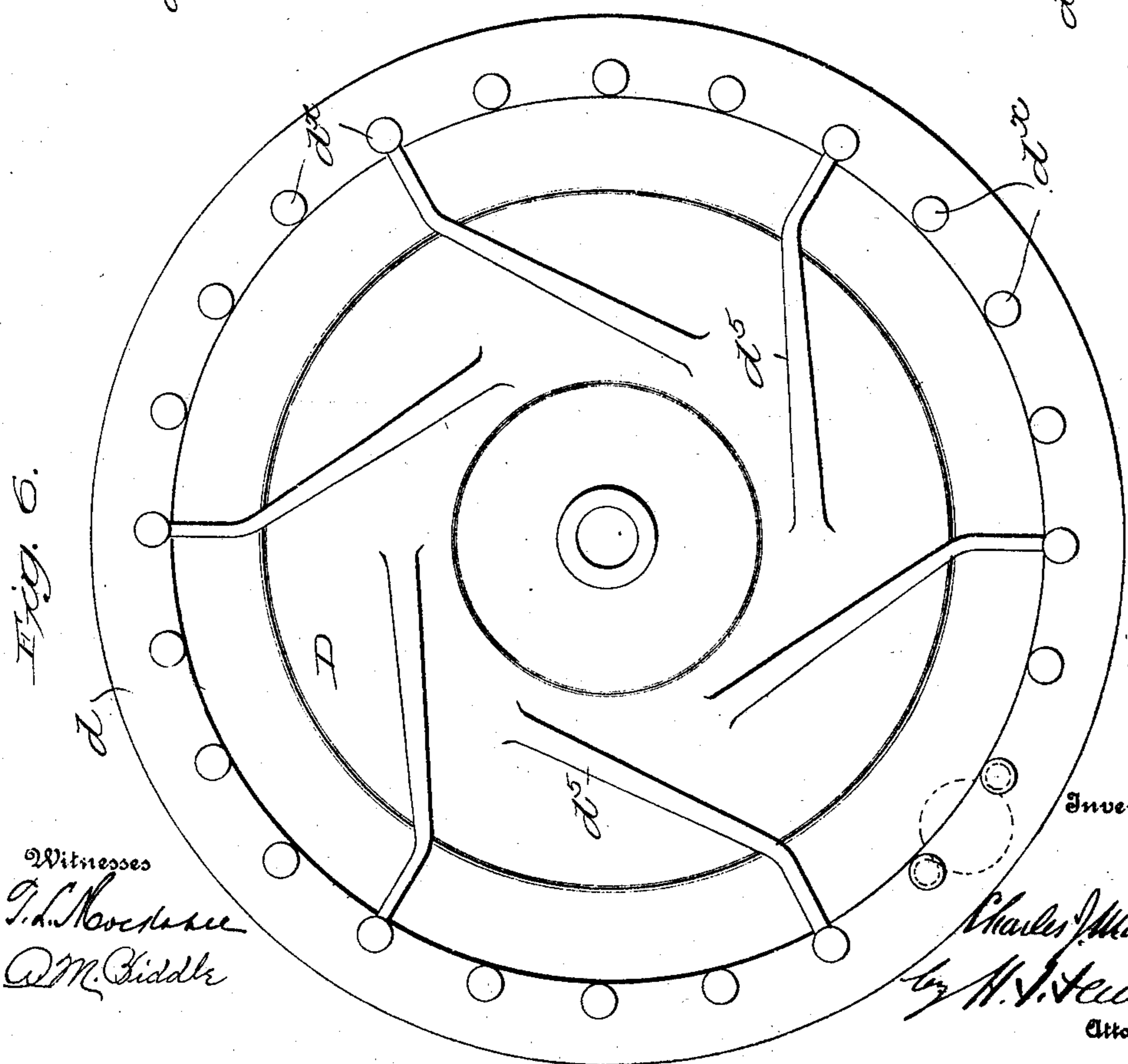
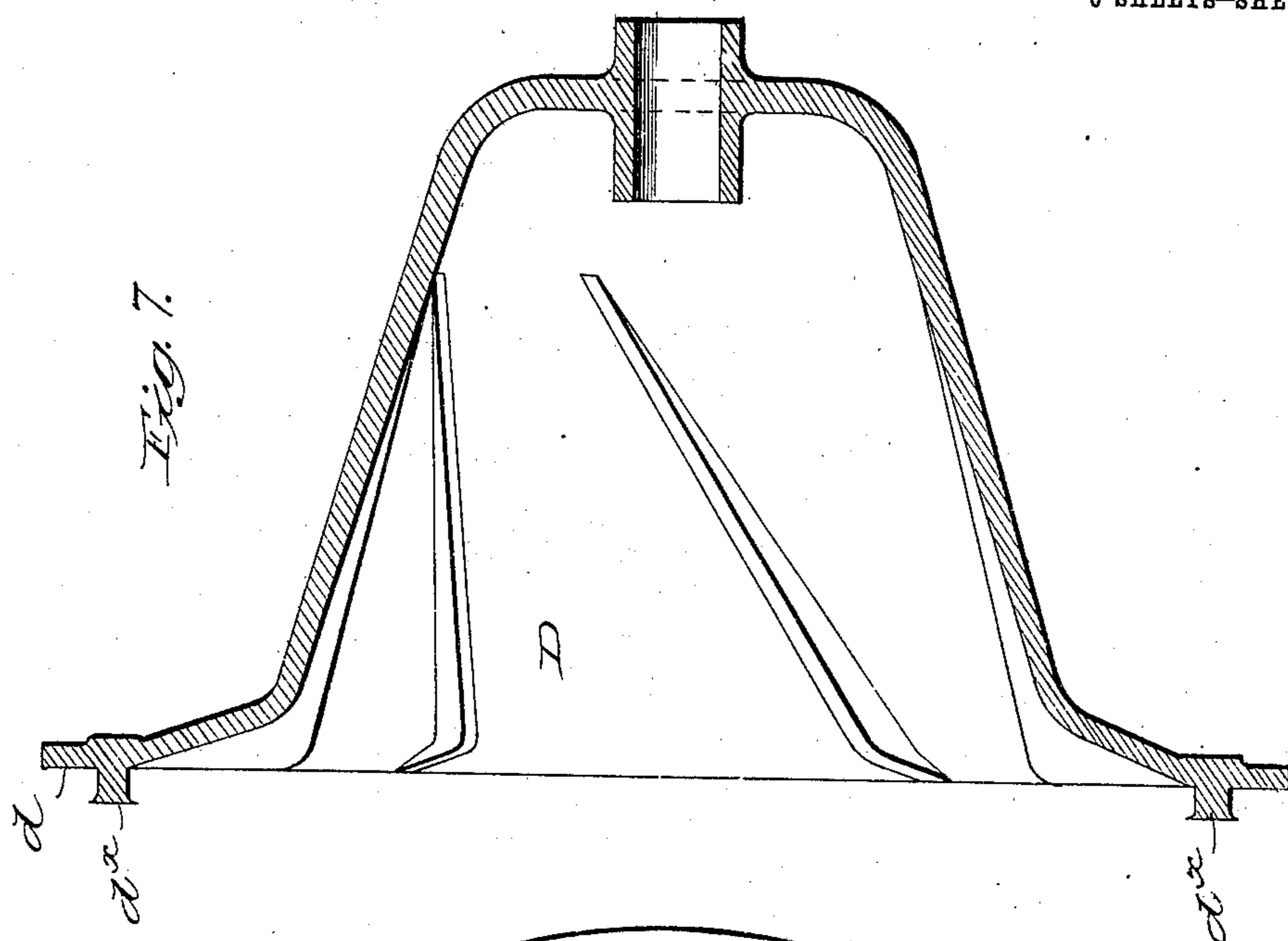
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6 SHEETS—SHEET 5



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6 SHEETS—SHEET 6.

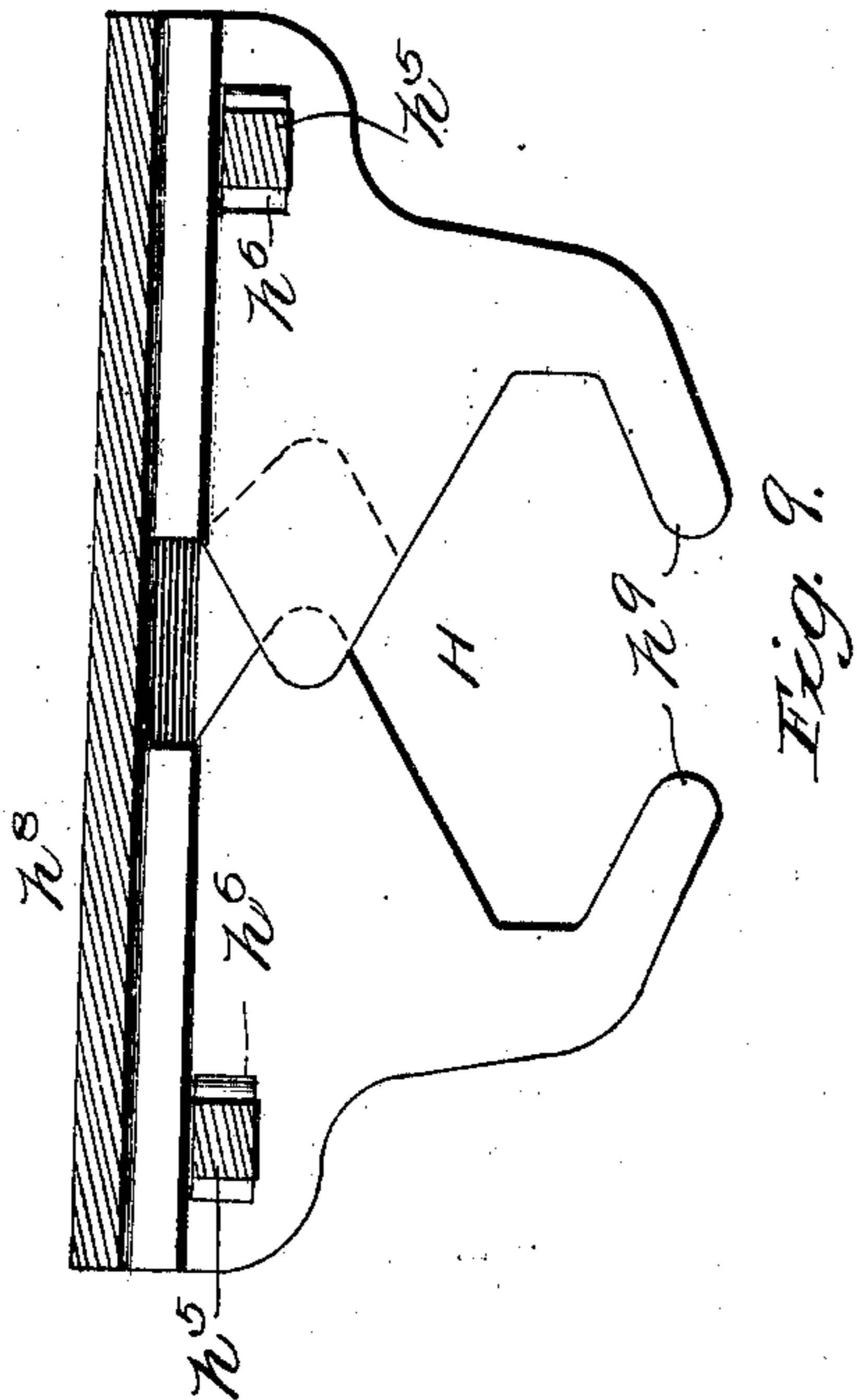


Fig. 9.

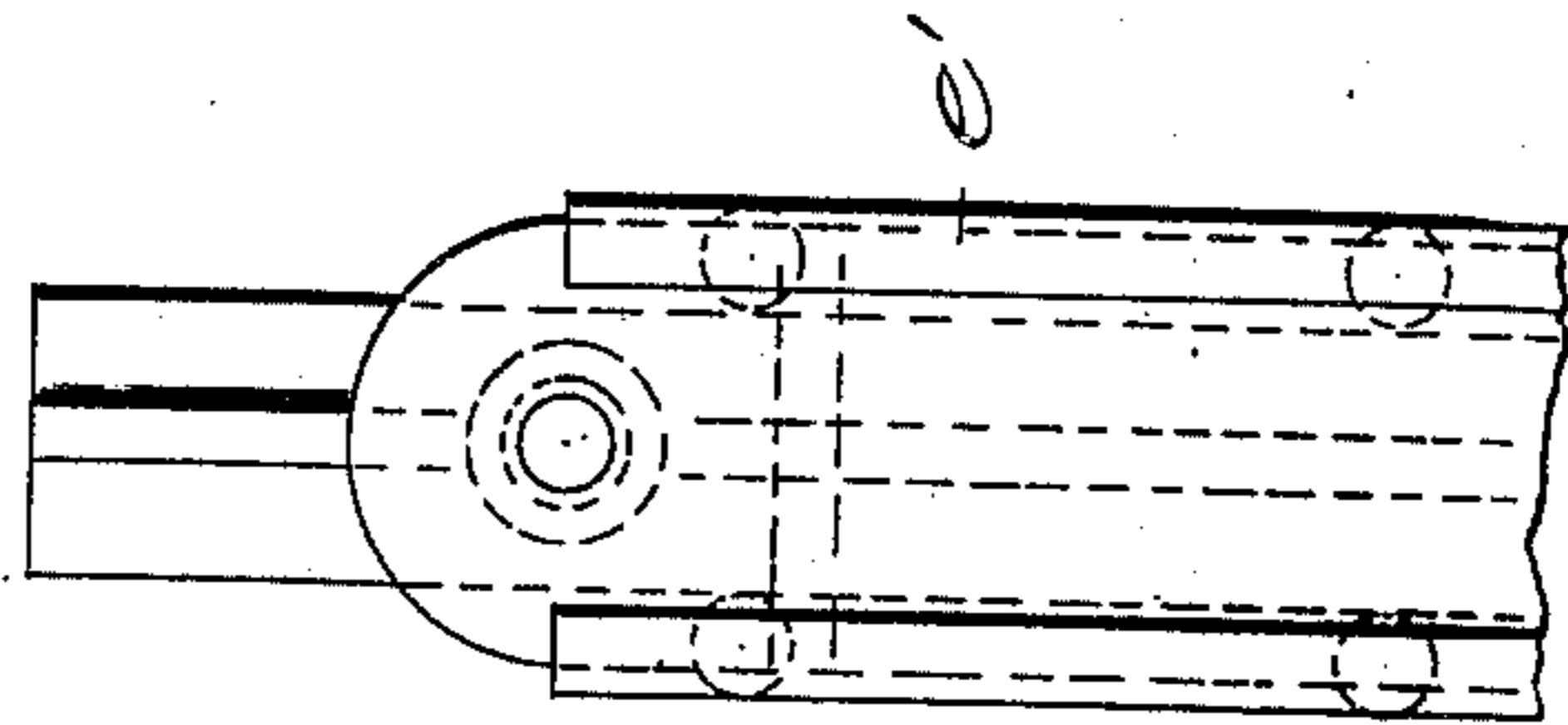


Fig. 11.

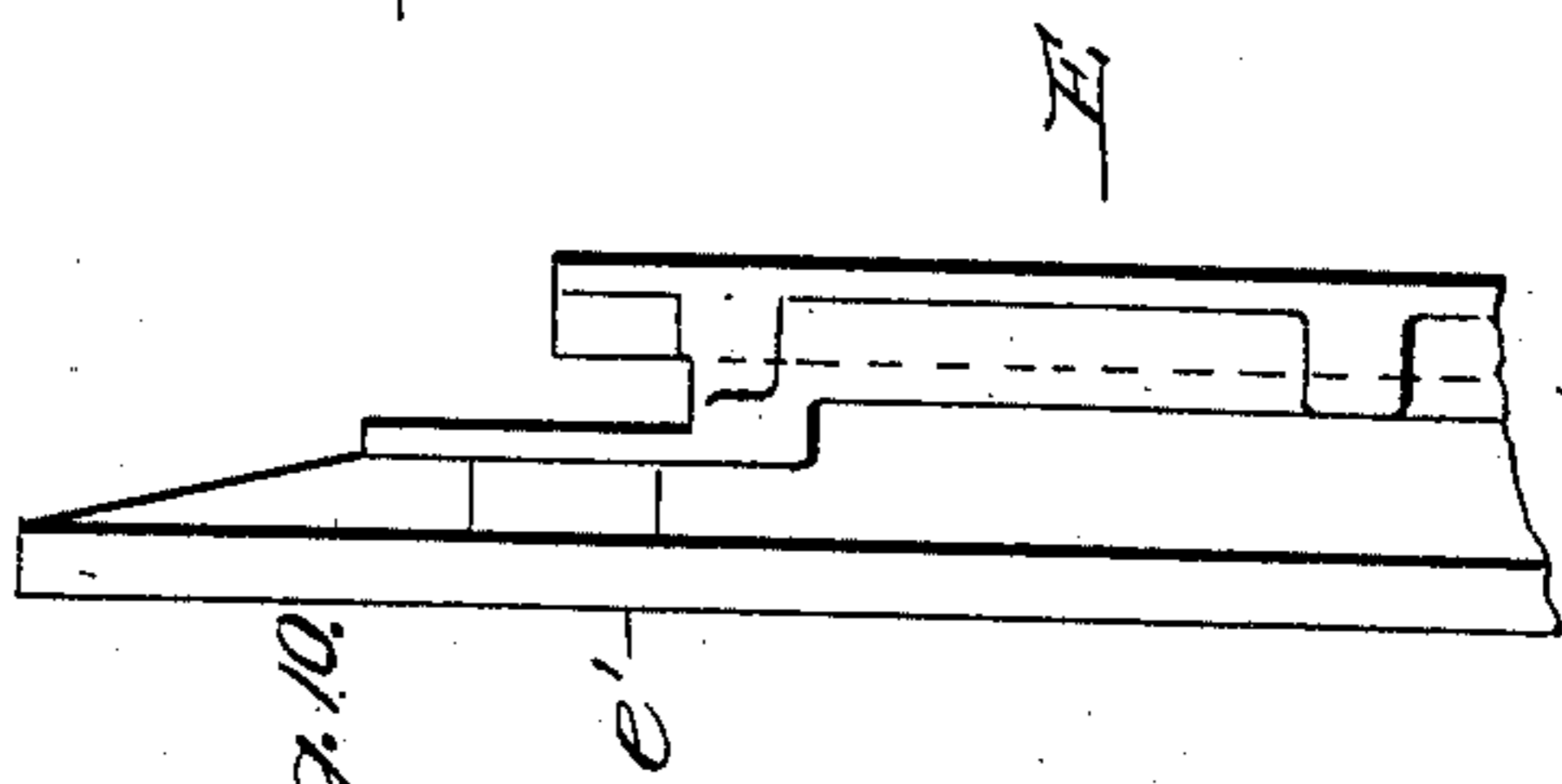


Fig. 10.

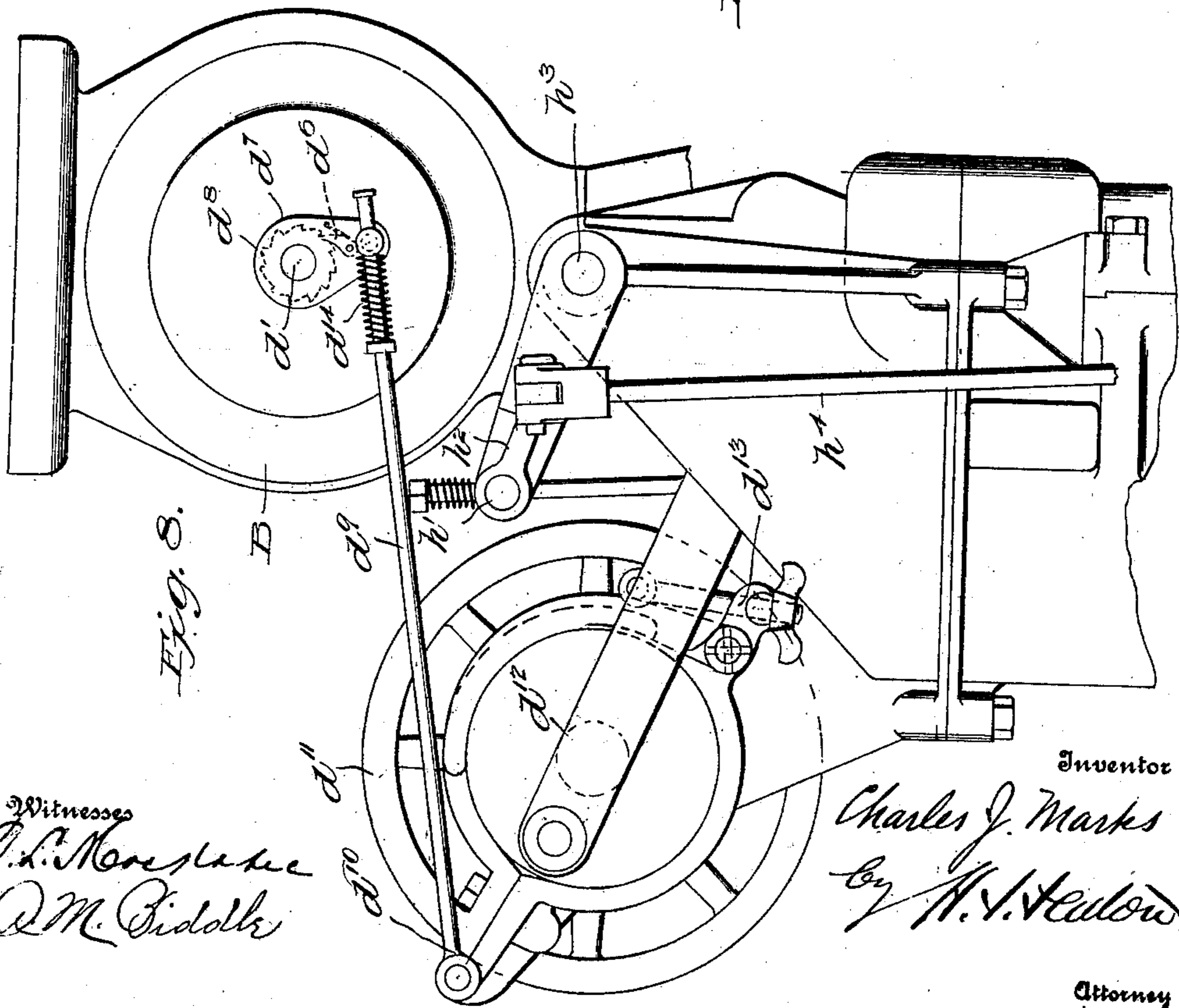


Fig. 8.

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UNITED STATES PATENT OFFICE.

CHARLES J. MARKS, OF BALTIMORE, MARYLAND, ASSIGNOR, BY MESNE ASSIGNMENTS,
TO THE PERFECT BOTTLE CAP COMPANY, OF BALTIMORE, MARYLAND, A CORPO-
RATION OF DELAWARE.

MACHINE FOR SEALING BOTTLES.

990,820.

Specification of Letters Patent.

Patented Apr. 25, 1911.

Application filed May 28, 1908. Serial No. 435,410.

To all whom it may concern:

Be it known that I, CHARLES J. MARKS, a citizen of the United States, residing in the city of Baltimore, State of Maryland, have
5 invented certain new and useful Improvements in Machines for Sealing Bottles, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of
10 this specification.

My invention relates to machines for sealing bottles, of that class wherein a metallic sealing cap is brought by endwise compression into sealing contact with the lip of the
15 bottle and then by radial compression into locking relation to the neck of the bottle. A machine of this type, to which my present invention is applicable is shown in U. S. Letters Patent No. 734,031 granted to N. B. Abbott and myself, issued and dated July
20 21, 1903.

My present invention has for its objects the provision of means for receiving a supply of such metallic caps and automati-
25 cally feeding them to the sealing and locking mechanism; also of means for automatically centering the bottle with relation to the cap-setting mechanism; and also of means for automatically and more accurately raising
30 ing and then adjusting the bottle, especially where the bottles employed vary somewhat in size, to bring it into proper operative relation to the cap-setting mechanism.

To these ends my invention consists of the
35 automatic cap-feeding device, also of the bottle-centering mechanism, and finally of the bottle raising and adjusting mechanism, all as hereinafter described, the novel features of which will be referred to in the
40 several appended claims.

In the accompanying drawings illustrating my invention:—Figure 1 is a side elevation of a machine of the type described embodying the features of my invention. Fig.
45 2 is a front elevation thereof, enlarged, but with the base broken away. Fig. 3 is a like view illustrating the base. Fig. 4 is a longitudinal sectional view of the hopper of the cap feed. Fig. 5 is an end view thereof,
50 with the feed drum removed. Fig. 6 is an end view of the feed drum detached. Fig. 7 is a longitudinal sectional view of the same. Fig. 8 is an enlarged side elevation

of the upper part of the machine taken from the side opposite to that shown in Fig. 1. 55 Fig. 9 is a detail view of the bottle-centering mechanism. Figs. 10 and 11 are detail views of portions of the chute of the cap-feeding device. Fig. 12 is a detail plan view of the yoke for operating the bottle
60 centering device. Fig. 13 is a detail sectional view illustrating the end of the chute of the cap-feed; and Fig. 14 is a detail bottom plan view thereof. Figs. 15 and 16 are detail views of the mechanism for raising
65 and adjusting the bottle with relation to the cap-setting mechanism.

Referring to the drawings, A designates a pedestal or support provided with a base a and an elongated body a' provided at its
70 top with a removable cap piece a^2 secured to body a' in any suitable manner. The hopper B for the sealing caps or disks is provided with a base b , which rests on the cap piece a^2 and is secured thereto in any
75 suitable manner. Said hopper is provided with an inclined bottom b' and an upper overhanging tray-like portion b^2 , which is on approximately the same plane as a horizontally-arranged internal web or flange b^3
80 located near the top of the hopper. One edge of said hopper is provided with a curved guideway b^4 , having openings b^5 formed therein, said guideway communicating with the tray-like portion b^2 through
85 an opening b^6 normally closed by an elastic flap b^7 . A web b^8 is arranged to restrict the discharge from the hopper B. A finger C projects into said hopper for a purpose to be hereinafter explained. 90

The feed drum D is preferably of frusto-conical form and provided with a flange d adapted to fit against the edge of hopper B in such manner as to form one side wall of
95 guideway b^4 . Said drum is mounted to rotate upon a shaft d' having one end mounted in a boss d^2 formed in hopper B, the other end of said shaft being mounted in a bearing d^3 carried by an arm d^4 depending from the said hopper. The interior of said
100 drum is provided with tangential ribs d^5 which serve to direct the caps or disks, as they enter the drum from the hopper, toward the flange d and between pins or projections d^6 , carried by said flange, said pins
105 being properly spaced to permit a single

cap or disk to pass between them. The shaft d' is intermittently rotated by means of a pawl d^6 carried by an arm d^7 and engaging a ratchet d^8 on said shaft, said arm being oscillated through the medium of a pitman d^9 connected with a crank d^{10} formed on a drive wheel d^{11} mounted in bearings d^{12} , carried by the cap-piece a^2 . A suitable band clutch mechanism d^{13} is illustrated as controlling the application of power to wheel d^{11} . A relief spring d^{14} is mounted on pitman d^9 to permit of the reciprocation of the latter without injury to the parts, if for any reason the caps should choke the feeding mechanism, or the functions of the latter be in any manner interrupted from any cause. The shaft d' is provided with a hand wheel d^{15} for operating the feed drum D to fill the chute with caps preliminary to the operation of the machine.

From the guideway b^4 leads a chute E formed of articulated sections e , the lowermost section being curved to a horizontal plane, as indicated at e' , and provided with supporting flanges e^2 constructed to support the caps or disks as they are fed and surrounding an opening e^3 through which the bottle neck projects. The disk or cap is held in proper position by spring pressed clamping arms e^4 , which are arranged in juxtaposition with the crimping mechanism F, the chute E being provided with an opening e^5 for the passage of the same. Said crimping mechanism may be of any suitable construction, such for instance as that illustrated in Letters Patent 734,031, granted to Abbott and Marks, July 21, 1903.

The bottle support G comprises a carrier head g mounted on a plunger g' supported in a guide g^2 . The plunger g is mounted to reciprocate through a chair g^3 having an inclined or cam face g^4 on which is slidably mounted a carrier elevating wedge g^5 . Said wedge is connected to a bell-crank lever g^6 pivoted to an arm g^7 of chair g^3 , said lever being in turn connected to an operating rod g^8 , the lower end of which is connected with a treadle g^9 .

To the treadle g^9 is connected a second operating rod h which is pivotally connected at h' to a yoke h^2 embracing cap piece a^2 and pivotally supported at h^3 in the latter. Depending from said yoke are rods h^4 , the lower ends of which are provided with bell-crank levers h^5 , the free ends of which fit in openings h^6 formed in the members h^7 of a bottle centering device H. Said members h^7 are slidably mounted in a guide h^8 and provided with projections h^9 cooperating to form jaws.

In practice the caps or disks are placed in hopper B and fed by gravity through the opening in flange b^8 , passing into engagement with the ribs d^5 of drum D. The rotation of the latter forces said caps or disks

outward between the pins d^6 into the guideway b^4 . Said pins are so arranged that the caps will pass readily between them when fed in proper position, but if improperly turned, said caps will wedge between the pins. In this event the cap is forced out by finger C as the drum rotates, said cap being directed upward through opening b^6 onto tray b^3 . From guideway b^4 the caps enter chute E, falling by gravity into proper position over the opening e^3 . The bottles are successively placed upon carrier g , and treadle g^9 depressed, which causes the wedge g^5 to elevate the bottle on the carrier until the neck thereof is forced through opening e^3 . Simultaneously with this operation the rod h effects the operation of the centering device H, whereupon the jaws h^9 will grasp the bottle neck and center it with relation to the crimping mechanism F. The latter is then operated in any preferred manner. In this connection it will be noted that the construction of the bottle support is such that the wedge g^5 compensates for bottles of different lengths, and adjustment of parts is thereby rendered unnecessary. It will also be noted that by forming the chute E of articulated sections, said chute can be made to conform to the movements of the other parts without interrupting the feed.

Having thus fully described my invention, what I claim as new and desire to secure by Letters Patent of the United States is:

1. In a bottle-sealing machine, the combination with a hopper provided with an eccentric web to restrict the discharge thereof, of a feed drum, with means to rotate the drum relatively to the hopper, said hopper and drum each having walls inclining toward each other and terminating in coinciding flanges forming a curved guideway between them, an annular series of spacing pins on one wall of said guideway and spirally arranged cap-directing ribs on the interior of said feed-drum leading toward said guideway.

2. In a machine for sealing bottles, a cap-feeding mechanism comprising a hopper having an inclined base and a flanged edge forming one wall of a curved guideway, a frusto-conical feed-drum having spirally-arranged cap-directing ribs on its interior wall and a flanged edge provided with spacing devices, said flange forming the opposite wall of said guideway, a shaft on which said feed drum is mounted to rotate it relatively to the hopper, and means to impart intermittent rotary motion to said shaft.

3. In a machine for sealing bottles, a feed-hopper provided with a guideway, a feed-drum receiving disks from said hopper, means carried by said drum for properly positioning said disks in said guideway, means for directing said disks to said posi-

tioning means, and a finger extending into said hopper for automatically returning improperly positioned disks to the hopper.

4. In a machine for sealing bottles, a feed-hopper provided with a guideway, means for directing disks from said hopper into said guideway, and an inclined finger extending into said hopper for forcing improperly positioned disks out of engagement with said feeding means and discharging them into said hopper at a point above said guideway.

5. In a machine for sealing bottles, a feed hopper provided with a guideway and means independent of the hopper for supplying sealing disks to said guideway, said hopper being provided with a tray-like portion communicating with said guideway, and a device for forcing improperly positioned disks out of engagement with said feeding means and discharging them upon said tray-like portion.

6. In a bottle-sealing machine, a feed-hopper provided with a guideway and an upper tray-like portion, of a feed drum provided with means for positioning disks in said guideway and also with means for directing the disks toward the positioning means, and a stationary finger carried by said hopper for forcing improperly positioned disks out of said guideway and on to said tray-like portion.

7. In a machine for sealing bottles, a feed-hopper provided with an inclined base and a curved flange edge forming one wall of a guideway; a feed-drum having a flange forming the other wall of said guideway, and means on its interior for directing sealing disks to said guideway, said hopper being provided with an overhanging tray-like portion communicating with said guideway, and a horizontal flange on approximately the same plane as said guideway.

8. In a machine for sealing bottles, the combination with a feed-hopper provided with a guideway and an eccentric discharge restricting web, a relatively-rotatable feed-drum receiving disks from said hopper, cap-directing ribs on the interior wall of said feed-drum leading toward said guideway, and a chute communicating at its upper end with said guideway and terminating at its lower end in a flanged opening adapted to support and deliver the caps singly and successively to contiguous cap-setting mechanism.

9. In a bottle-sealing machine, the combination with a disk-feeding mechanism, including a chute formed of articulated sections, the lowest section thereof being curved at its terminus and provided with an opening to receive the neck of a bottle, said opening having flanges to receive and support a cap delivered thereto, of a bottle-elevating device, a bottle centering device and means

for simultaneously operating said elevating and centering devices.

10. In a bottle-sealing machine, a feed hopper having a guideway, a feed drum co-operating therewith, and a chute leading from said guideway and formed of articulated sections, the lowermost section being curved and provided with an opening to receive the neck of a bottle, and spring pressed disk-supporting means surrounding said opening.

11. In a bottle sealing machine, the combination with disk-feeding mechanism comprising a hopper and a relatively-rotatable feed-drum, said hopper and drum having flanged edges operatively coinciding to form a curved guideway, of a chute leading from said guideway and formed of articulated sections, the lowermost section terminating in a horizontal portion having a flanged opening to receive the neck of a bottle, and spring-pressed disk-holding means surrounding said flanged opening.

12. In a bottle sealing machine; a disk-feeding mechanism comprising a hopper and a relatively rotatable feed drum, each with coinciding flanges forming a guideway between them, means forming part of said guideway operating to permit the passage through it of caps singly and in series, and an articulated chute leading from said guideway the lower end of said chute being constructed to embrace a bottle neck and provided with means to operatively co-act with suitable bottle-placing and cap-setting devices.

13. In a bottle sealing machine the combination with disk-feeding mechanism including an articulated chute terminating at its lower end in a horizontal portion having an opening adapted to receive a bottle neck, said opening being flanged to operatively support a cap delivered thereto, of bottle-elevating mechanism operating to bring the head of a bottle through said flanged opening and into register with a cap supported upon the flange thereof.

14. In a bottle-sealing machine, the combination with a disk-feeding mechanism including a chute leading therefrom, and provided with an opening to receive a bottle neck, means adjacent said opening to support a cap in position to be crimped on a bottle-head, a bottle-elevating device operatively coacting therewith, a bottle-centering device comprising a pair of clamping jaws, with means to actuate said centering device.

15. In a bottle sealing machine, the combination with disk-feeding mechanism, of a bottle-elevating device, and bottle-centering device, the latter formed of jaws arranged to grasp a bottle neck, bell crank levers for operating said jaws, and means for simultaneously actuating said bell crank levers and said elevating device.

16. In a bottle sealing machine the combination with disk-feeding mechanism, of a bottle-elevating device, and a bottle-centering device, the latter formed of slidable jaws, a guide for the latter, bell crank levers for operating said jaws and means for simultaneously actuating said levers and said elevating device.

17. In a bottle sealing machine, the combination with disk-feeding mechanism, of a bottle-elevating device, and a bottle-centering device, the latter formed of jaws arranged to grasp a bottle neck, a pivoted yoke for operating said jaws, and means for rocking said yoke and operating said elevating device in unison.

18. In a bottle-sealing machine the combination with disk-feeding mechanism, of a bottle-elevating device, and a bottle-centering device, the latter formed of jaws arranged to grasp a bottle neck, a pivoted yoke for operating said jaws, a treadle, and connections between said treadle and said yoke and also between said treadle and said elevating device.

19. In a bottle-sealing machine, the com-

bination with disk-feeding mechanism, of a bottle-elevating device comprising a vertically movable bottle-carrier, a transversely adjustable wedge-block adapted to elevate the bottle on said carrier, a chair provided with a transversely inclined face on which said wedge-block is slidingly supported; a coacting bottle-centering device; and means for actuating said wedge-block and said centering device in unison.

20. In a bottle-sealing machine, the combination with disk-feeding mechanism, of a bottle-elevating device comprising a carrier, a chair having a transversely inclined face and a depending arm, a transversely adjustable wedge block slidingly mounted on said inclined face and engaging said carrier, a bell-crank lever mounted in said arm, and means for rocking said lever.

In testimony whereof, I have hereunto affixed my signature this 26th day of May A. D. 1908.

CHARLES J. MARKS.

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