

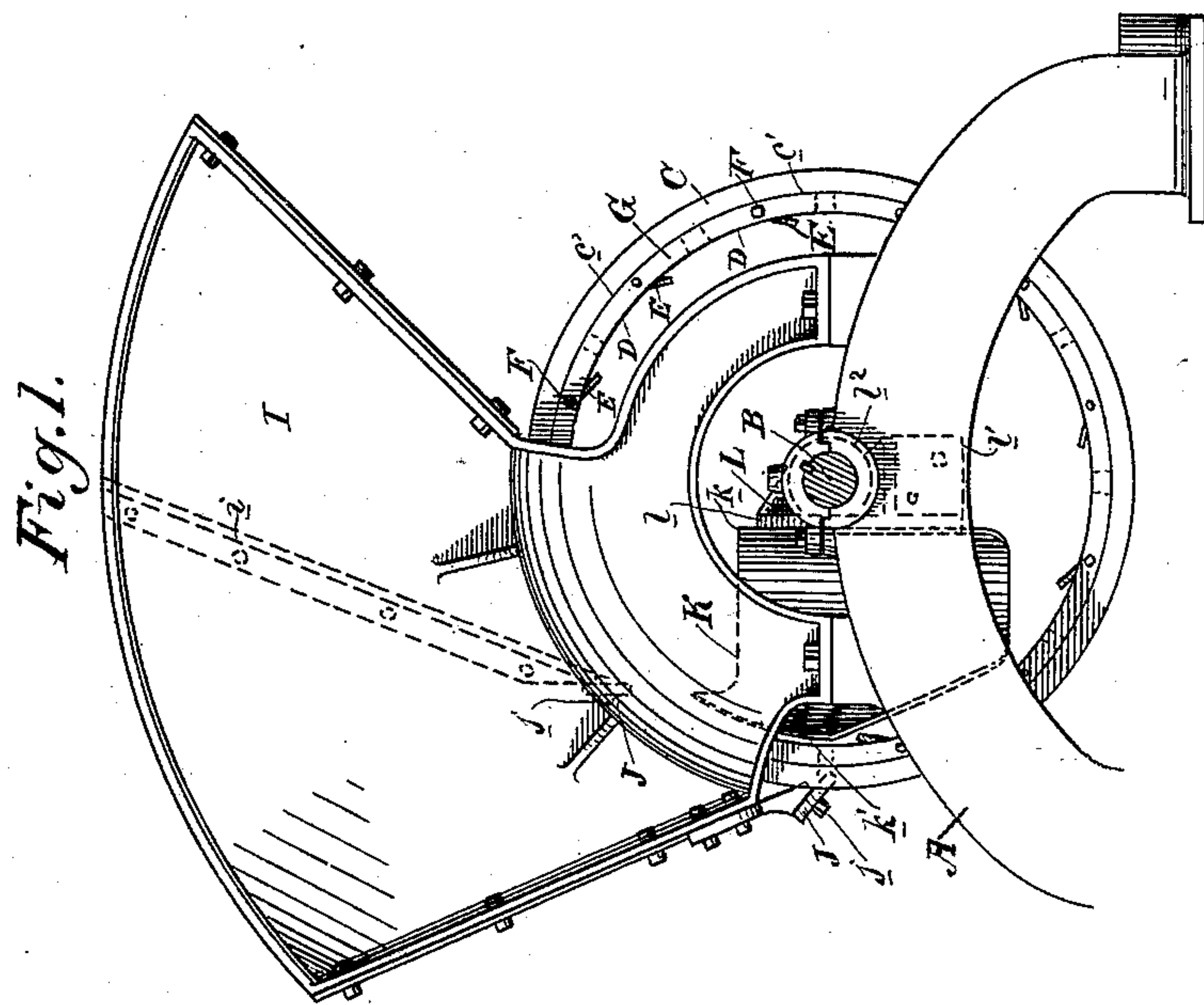
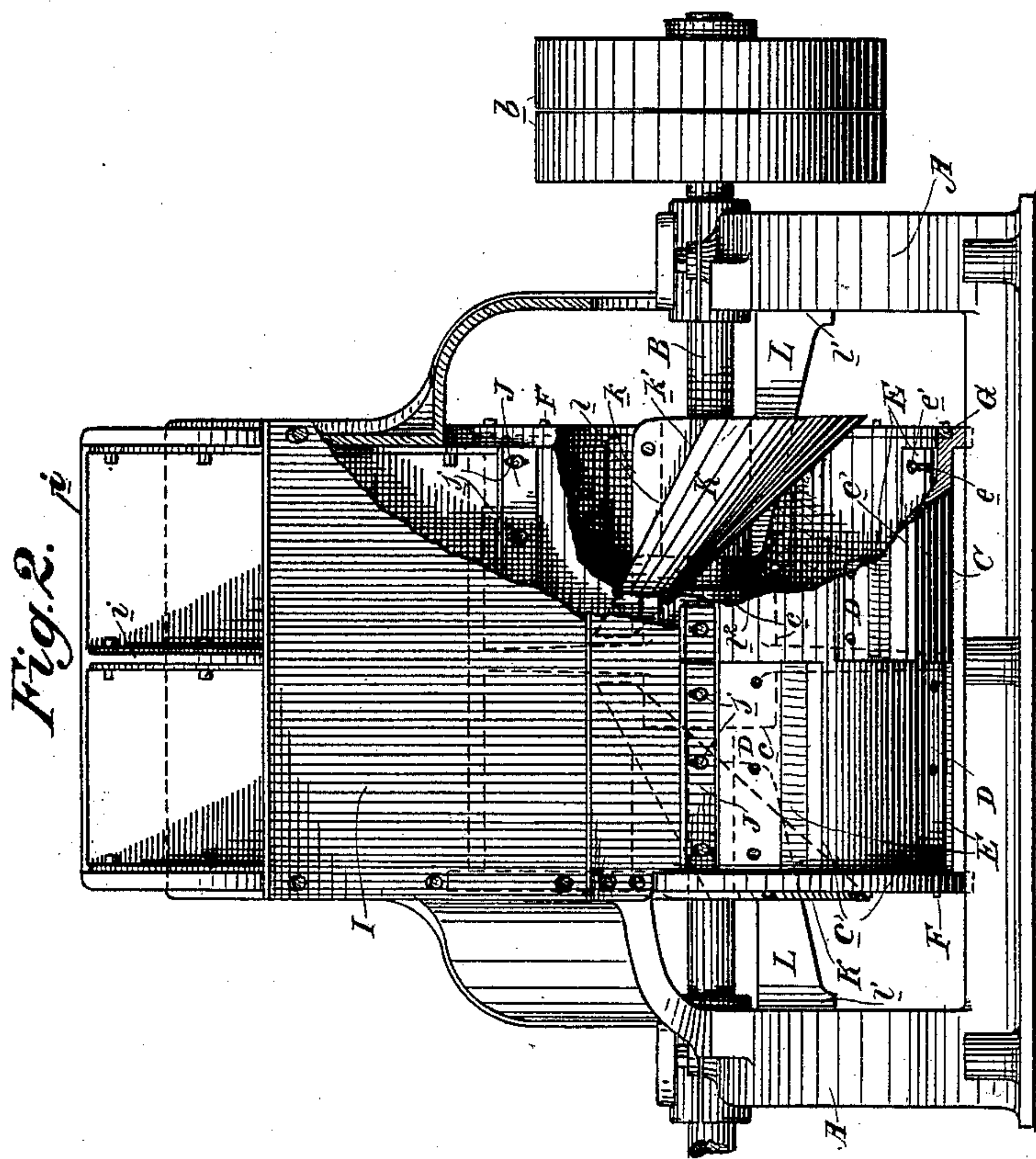
(No Model.)

2 Sheets—Sheet 1.

J. N. S. WILLIAMS.
SUGAR CANE SLICING MACHINE.

No. 420,427.

Patented Jan. 28, 1890.



Witnesses,
J. B. Thomas
H. C. Lee.

Inventor,
John N. S. Williams
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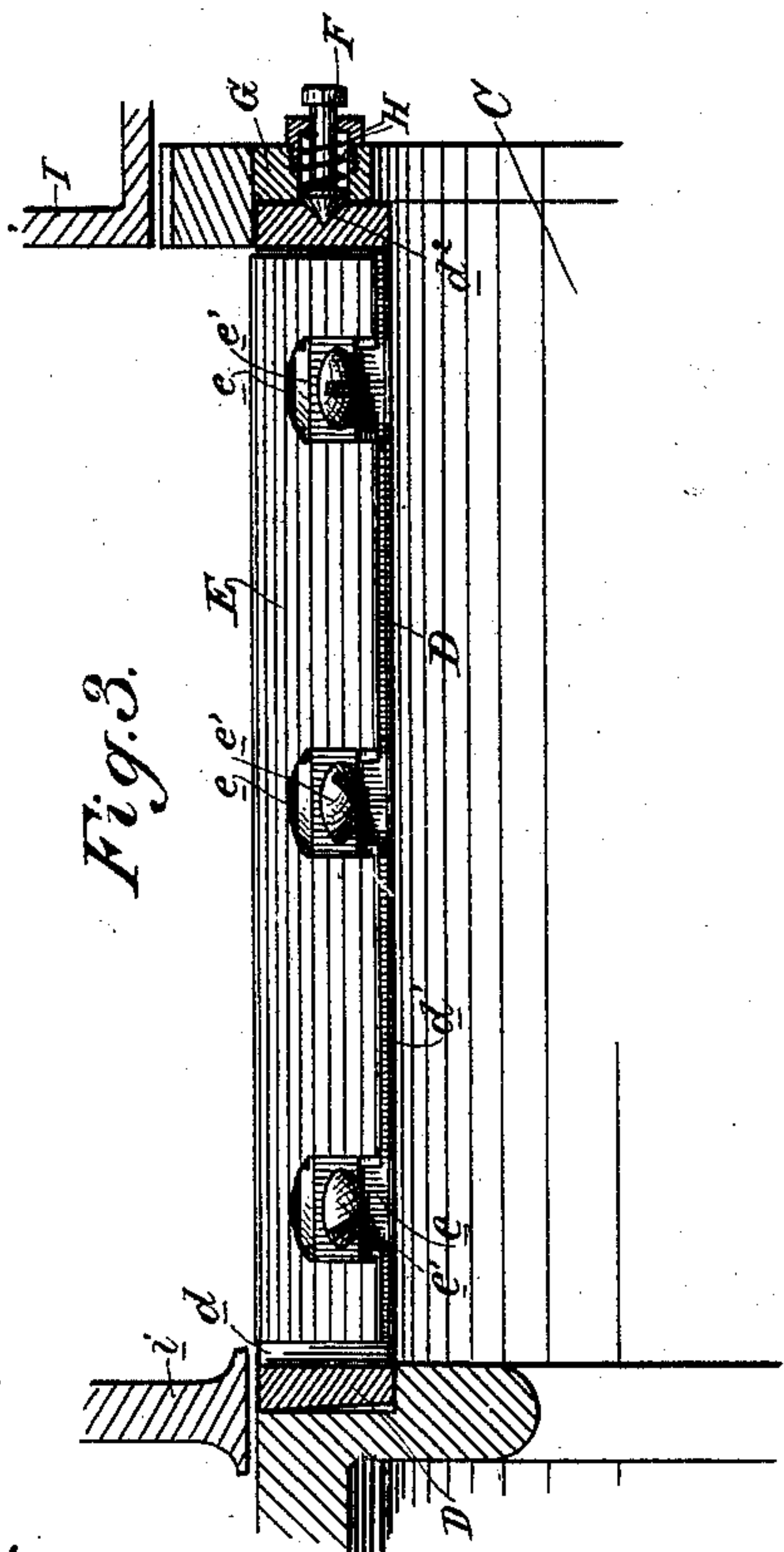
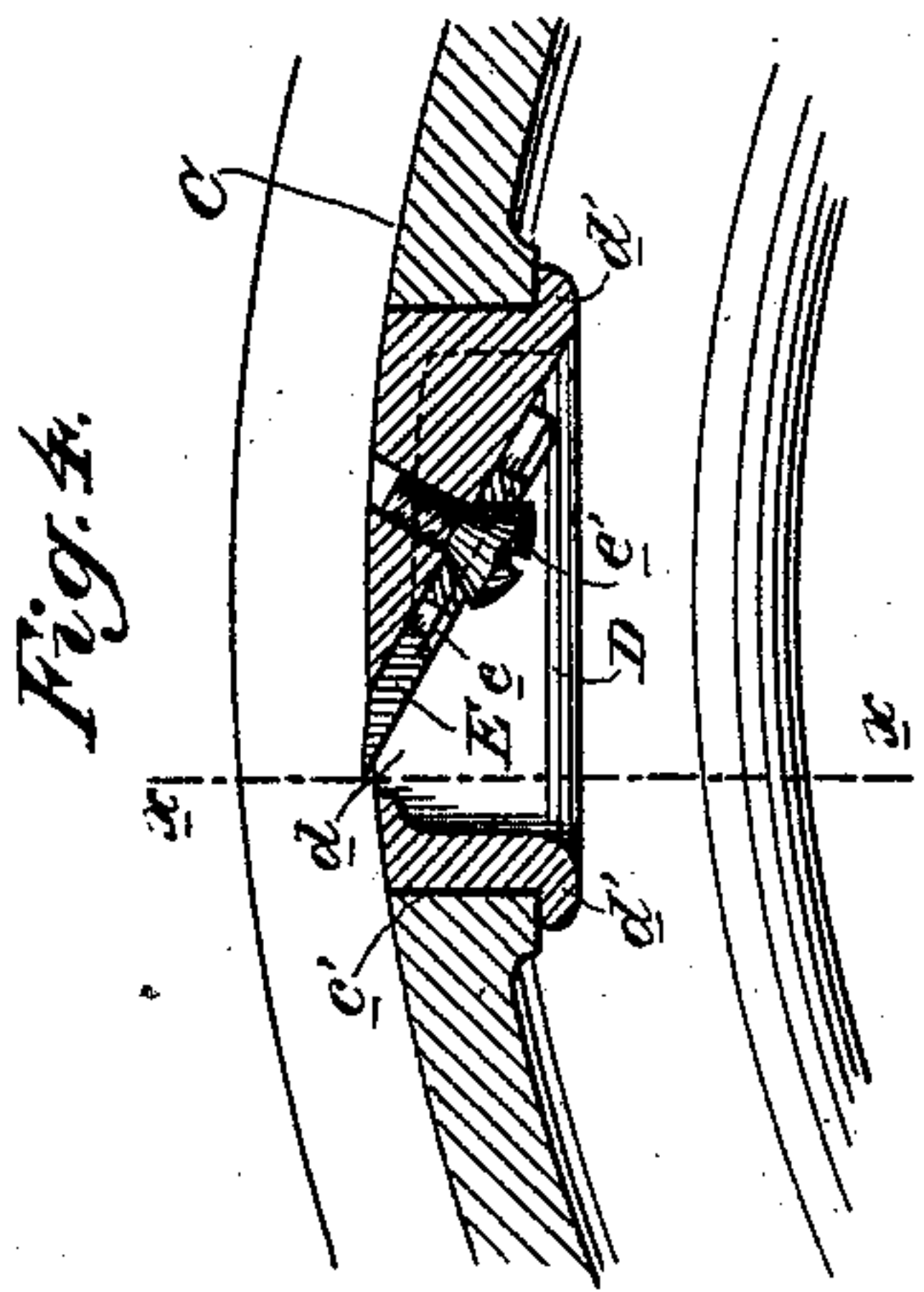
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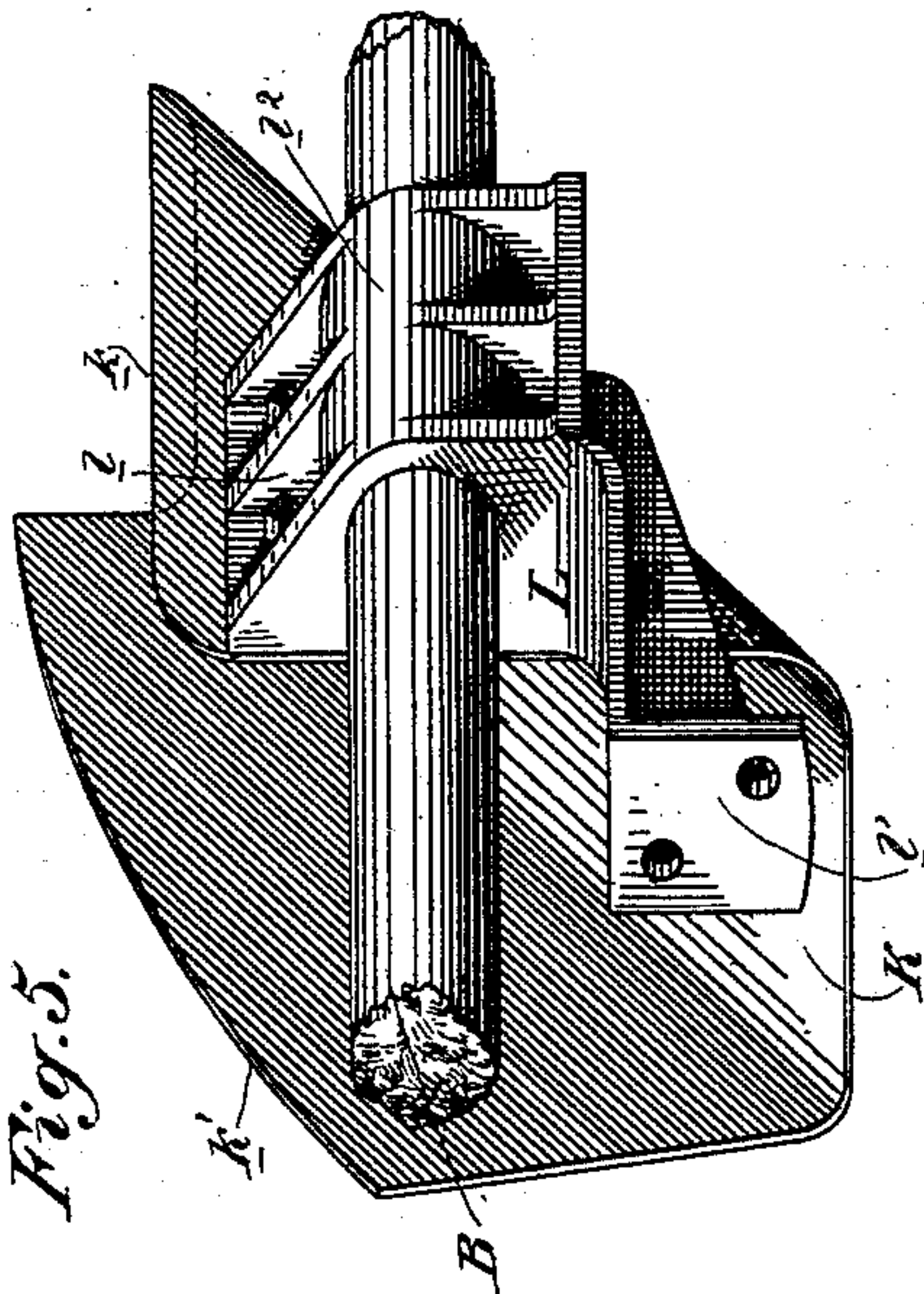
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UNITED STATES PATENT OFFICE.

JOHN N. S. WILLIAMS, OF HONOLULU, HAWAII.

SUGAR-CANE-SLICING MACHINE.

SPECIFICATION forming part of Letters Patent No. 420,427, dated January 28, 1890.

Application filed July 23, 1889. Serial No. 318,415. (No model.)

To all whom it may concern:

Be it known that I, JOHN N. S. WILLIAMS, of Honolulu, Hawaiian Islands, have invented an Improvement in Sugar-Cane-Slicing Machines; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to the class of machines adapted for slicing sugar-cane and preparing it for diffusion; and my invention consists in the novel and improved constructions hereinafter fully described, and specifically pointed out in the claims.

The object of my invention is to provide a cane-slicing machine of great capacity, simple in its construction and adjustment, and not liable to get out of order.

Referring to the accompanying drawings for a more complete explanation of my invention, Figure 1 is an end view. Fig. 2 is a front view. Fig. 3 is a vertical section on line xx , Fig. 4. Fig. 4 is a vertical cross-section of box D. Fig. 5 is a perspective view of chute K and bracket L.

A is the frame of the machine, which carries a transverse drive-shaft B, having on one end the customary fast and loose pulleys b . To the shaft B is firmly keyed, by its hub c , the drum C. This drum is an open-ended one and has made in its periphery the openings or slots c' , which extend from each end of the drum to its center plane, and are arranged alternately or staggering from each side.

D are separate or independent boxes having apertures or openings d , in one wall of which is seated the cutting-knife E, said knife having slots e in its edge to receive the securing-screws e' , whereby the knife may be set out or in to its necessary place. These boxes D have flanges d' at their backs, and when said boxes are set into the slots or openings c' of the drum from within their outer faces conform to the curvature of the periphery of the drum, and their inner flanges d' bear against the inner surface of the drum, said boxes having a thickness equal to that of the drum's periphery. In this position the knives E of the boxes project suitably beyond the periphery of the drum. These boxes are fitted, as above stated, to their seats from the inside, and are not screwed or in any way firmly held to place, but are lightly held when the

machine is at a state of rest by means of the catch-pins F entering a beveled socket d^2 in the outer end of the box, said pins being mounted in a ring G, let into the flanged ends of the drum and controlled by the springs H. When the boxes are placed in their seats, the catch-pins simply move back until opposite the sockets d^2 , when they spring forward into them and lightly hold the boxes, so that they will not drop out when the machine is at a state of rest.

I is the feed-hopper of the machine, through the throat of which the drum rotates. This hopper may extend around the periphery of the drum to a greater or less extent, as may be desired, and said hopper may be divided by a partition or partitions into any number of separate compartments. The partitions, and also the lower wall of the hopper, carry at their lower ends the counter-knives J, which are secured adjustably by bolts j , and extend into more or less immediate proximity to the periphery of the drum and the slightly-projecting knives E of the boxes.

Within the drum are located the inclined discharge-chutes K. These consist of curved metal plates having one top edge k horizontal and the other top edge k' at an angle extending from the center downwardly to the open ends of the drum. These chutes are two in number—one on each side—their inner ends being about the center plane of the drum and their outer ends about flush with or extending a little beyond the open ends of the drum. These chutes are of course stationary and independent of the rotation of the drum. They are secured in place by brackets L, having an angular shape, one end l carrying the chute and the other end l' being bolted to the frame A. These brackets have also sockets l^2 , through which the shaft B passes and in which it rotates, so that, being thus mounted about the axis of the drum, the chutes may turn about said axis to any position found best by simply shifting the position of the bolts securing the ends l' of the brackets to the frame and fitting them in fresh places.

The operation of the machine is as follows: The cane is placed in the hopper I in its several compartments. The lower ends of the cane rest upon the periphery of the drum, and slices are cut off by the rotary knives E acting against the counter-knives J. These

slices drop through the openings *d* of the boxes D into the interior of the drum, and falling into the inclined chutes K are by them directed outwardly to each end of the drum.

5 The object in dividing the hopper into several compartments is to increase its capacity by increasing the number of counter-knives and the places at which the cane is sliced, so that each knife E at each revolution makes as
10 many cuts as there are counter-knives to act against.

The object in mounting the knives in the peculiar boxes described and in seating the boxes in the manner set forth is to provide
15 for the ready placing of the knives with the least appreciable loss of time. The boxes are held to their seats, when the machine is running, by centrifugal force, because the rate of revolution in these machines is a very high
20 one, and the boxes will be held firmly to their seats in the drum by tending outwardly, their flanges *d'* preventing them from going too far. When the machine is running very slowly or is at a state of rest, the small spring
25 catch-pins F hold the boxes in place lightly and prevent them from dropping out; but they do not hold them to their seats when at work, as it is not the intention to firmly secure said boxes, but to rely wholly upon the
30 centrifugal force to keep them in place. Thus mounting the boxes allows me to readily and quickly insert them from inside the drum without having to fix any screws or bolts, the spring catch-pins acting automati-
35 cally and not delaying the work.

The object in inclining one top edge of the discharge-chutes is to allow any slices which may drop upon said edge to work down the incline, while the other edge of the chute, be-
40 ing horizontal, provides for catching and confining the slices properly, and the whole general inclination of the bottom of the chute provides for the discharge of the slices by gravity.

45 As above stated, the chutes may be set at any position within the drum found best by turning their securing-brackets around the central shaft B, which passes through their sockets.

50 Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a cane-slicing machine, the rotary drum having the peripheral openings or slots,
55 in combination with the independent boxes fitted freely within said openings or slots, said boxes having curved outer faces and inner flanges bearing against the inner surface of the drum, means for holding the boxes in
60 place, and knives carried by said boxes, substantially as described.

2. In a cane-slicing machine, the rotary drum having peripheral openings or slots, in combination with the independent boxes fit-
65 ted freely to said openings or slots and having apertures or openings, knives secured in said apertures or openings, and spring-pins

for holding the boxes in position, substantially as described.

3. In a cane-slicing machine, the rotary
70 drum having peripheral openings or slots, in combination with the independent flanged boxes fitted freely to said openings or slots, their flanges bearing against the inner wall of the drum, knives carried by the boxes,
75 and spring-controlled catch-pins carried by the drum and engaging the boxes for lightly holding them in place, substantially as described.

4. In a cane-slicing machine, the rotary
80 open-ended drum and suitable knives carried by its periphery, in combination with the fixed inclined discharge-chutes located within the drum, said chutes consisting of curved metal plates having one top edge inclined
85 and the other top edge horizontal, substantially as described.

5. In a cane-slicing machine, the rotary open-ended drum and knives carried by its periphery, in combination with the inclined
90 discharge-chutes located within the drum, and brackets carrying said plates and movable about the axial line of the drum, whereby the chutes may be moved to different positions within the drum, substantially as
95 described.

6. In a cane-slicing machine, the frame, the drive-shaft carried thereby, and the open-ended drum mounted on the drive-shaft and having peripheral knives, in combination
100 with the inclined discharge-chutes located within the drum, and the brackets bolted to the frame and carrying the discharge-chutes, said brackets having sockets mounted upon the drive-shaft, whereby the chutes may be
105 turned to different positions within the drum, substantially as described.

7. In a cane-slicing machine, the combination of the rotary drum having peripheral knives with the hopper under which the
110 drum rotates, said hopper having a partition or partitions dividing it into a number of compartments and counter-knives at the base of the partitions and the end wall of the hopper, substantially as described.
115

8. A cane-slicing machine consisting of the combination of the frame, the drive-shaft mounted in the frame, the open-ended rotary drum mounted on the shaft and having pe-
120 ripheral openings or slots, the independent flanged and apertured boxes fitted freely to said sockets, the knives carried by said boxes, the compartment-hopper supported by the frame and having counter-knives, and the fixed inclined discharge-chutes within the
125 hopper and carried by the frame, all arranged and adapted to operate substantially as described.

In witness whereof I have hereunto set my hand.

JOHN N. S. WILLIAMS.

Witnesses:

S. H. NOURSE,
J. H. BLOOD.