

No. 745,861.

PATENTED DEC. 1, 1903.

J. F. KELLER & H. R. CARTEY.

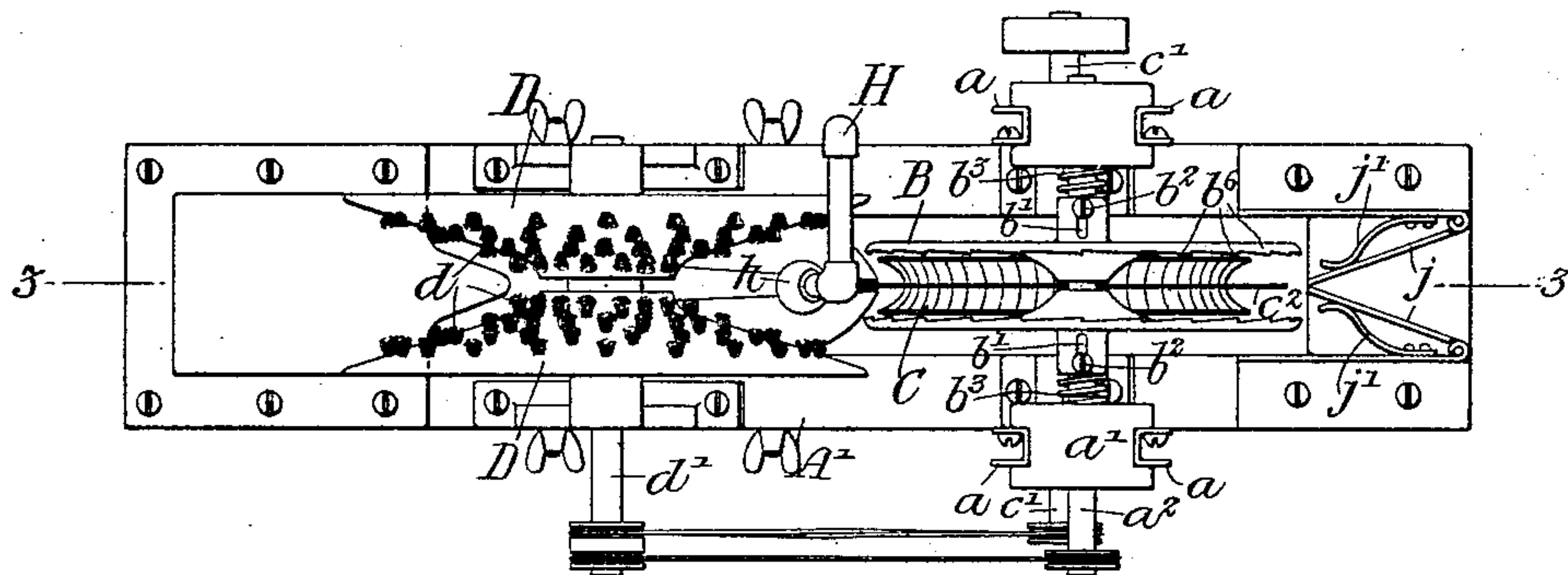
FISH CLEANING MACHINE.

APPLICATION FILED MAY 27, 1903.

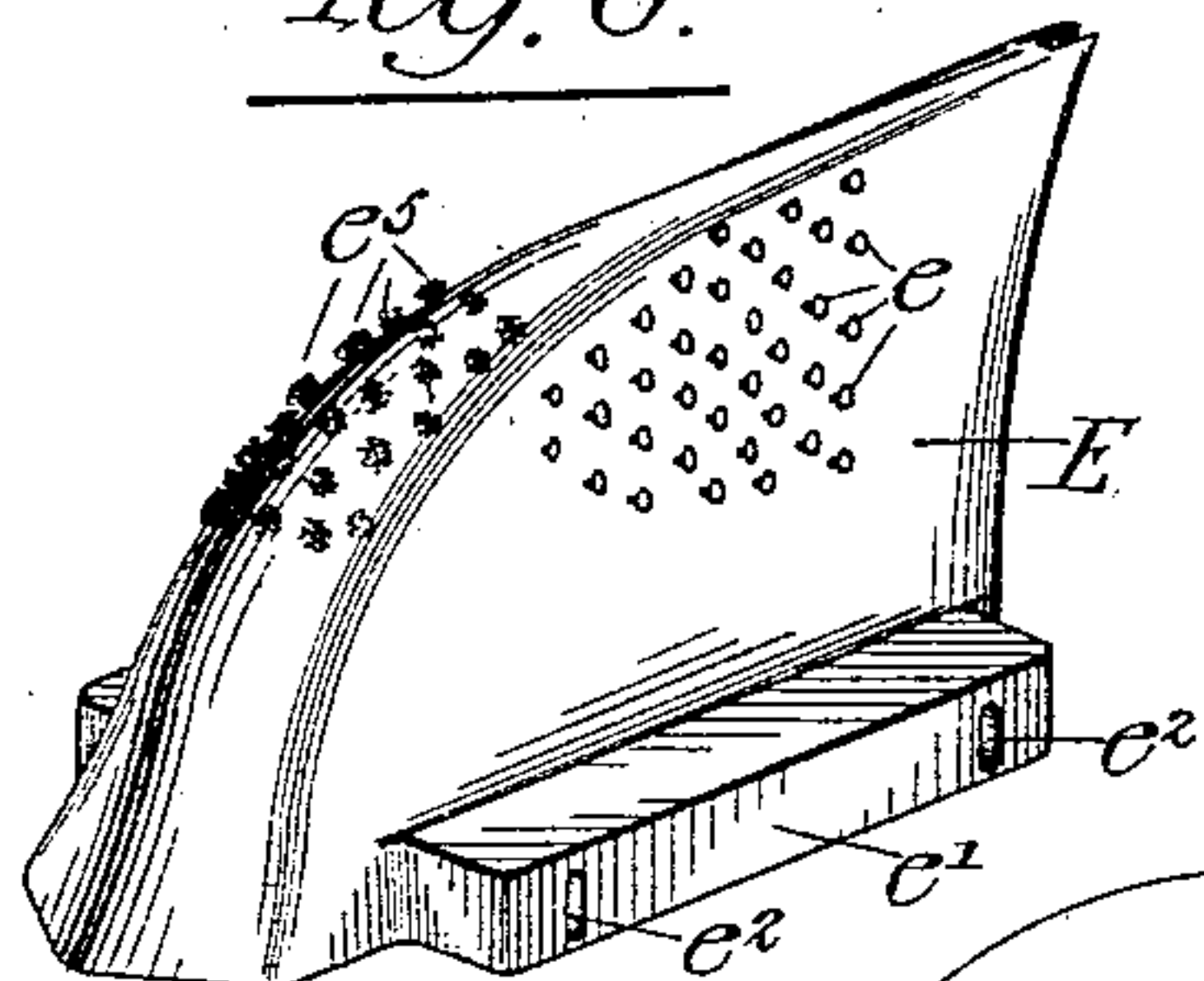
NO MODEL.

2 SHEETS—SHEET 1.

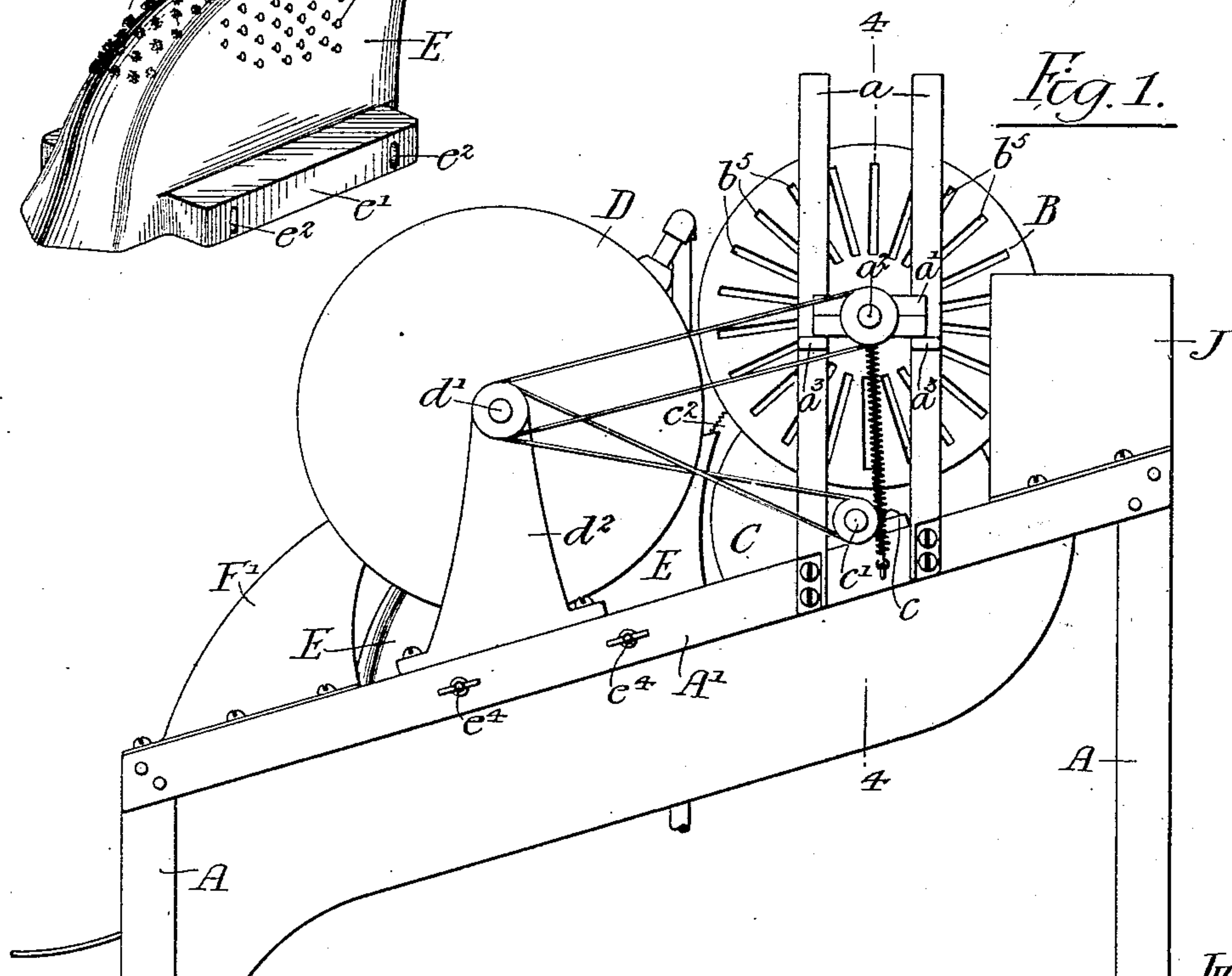
*Fig. 2.*



*Fig. 6.*



*Fig. 1.*



*Witnesses:-*

*Chas. W. Gray*  
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*Inventors*

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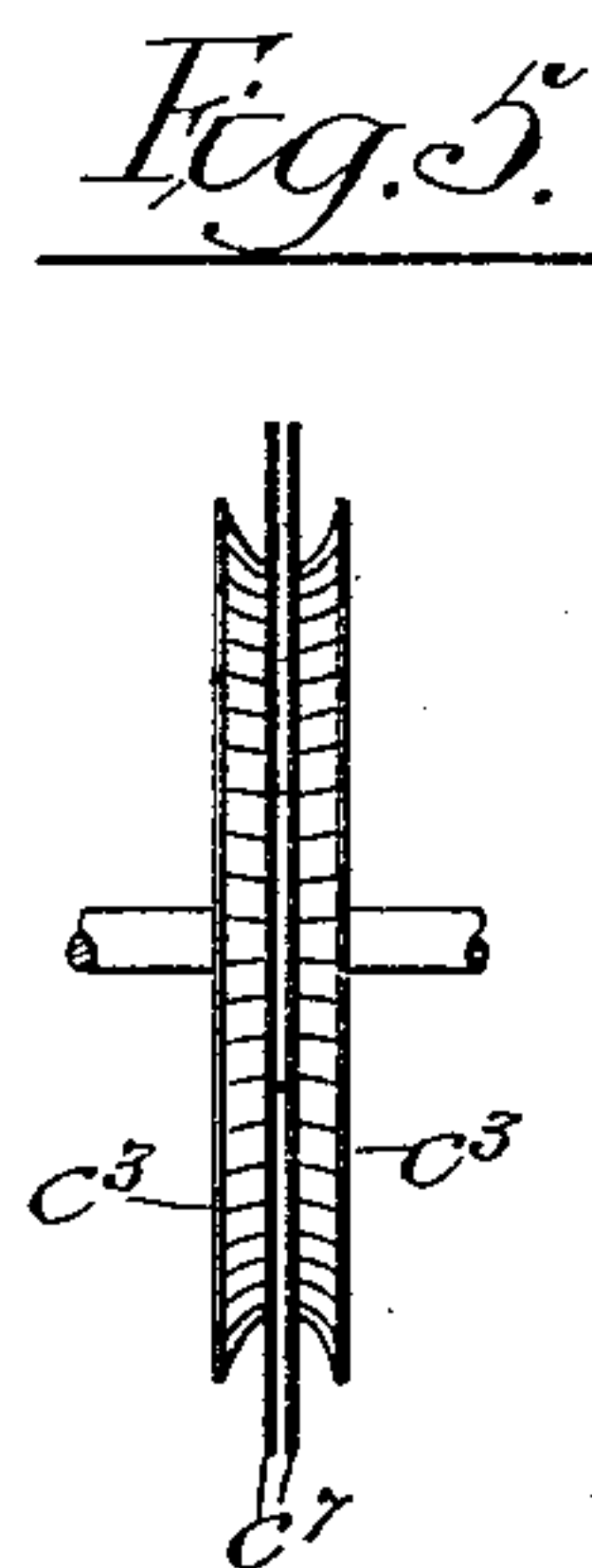
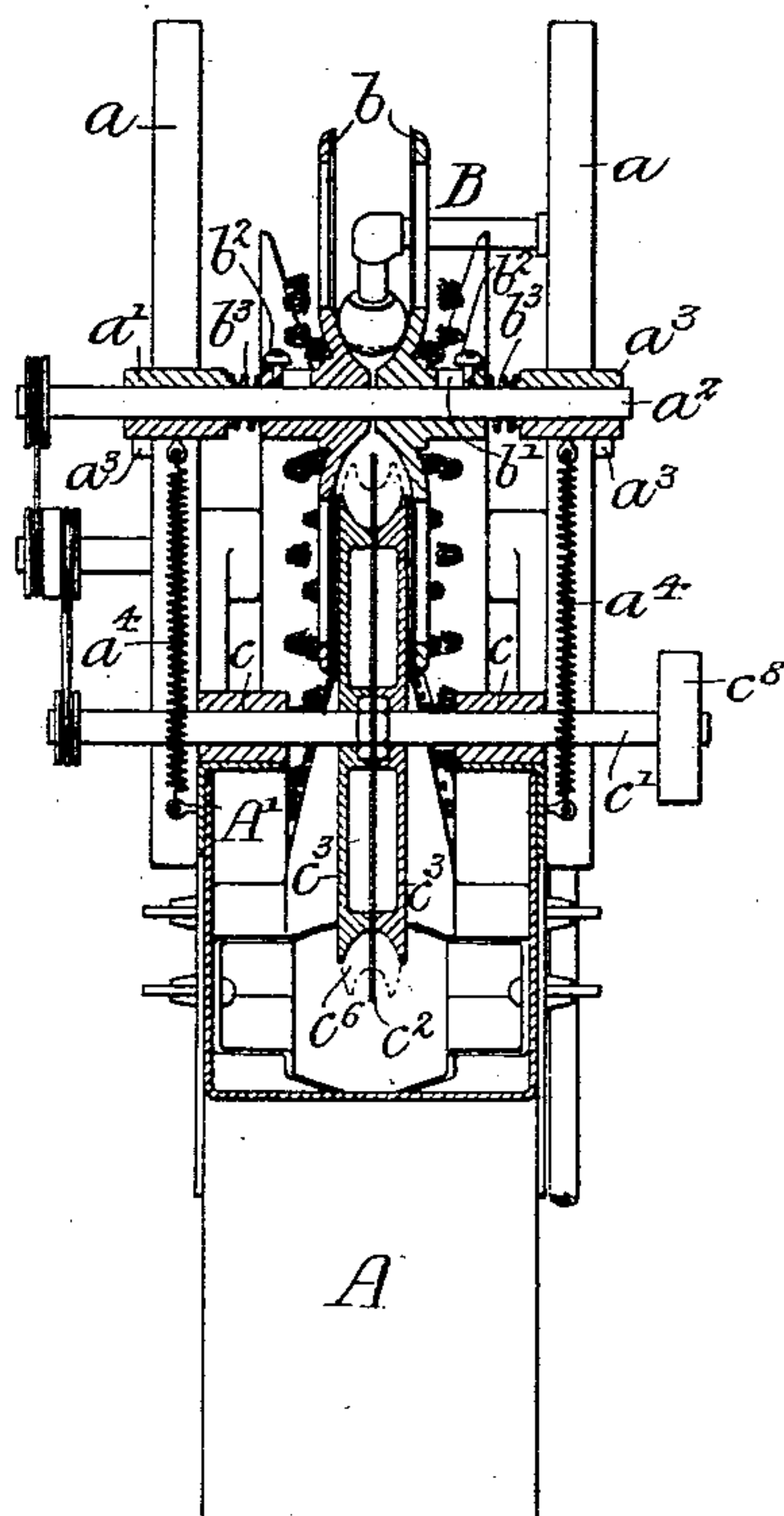
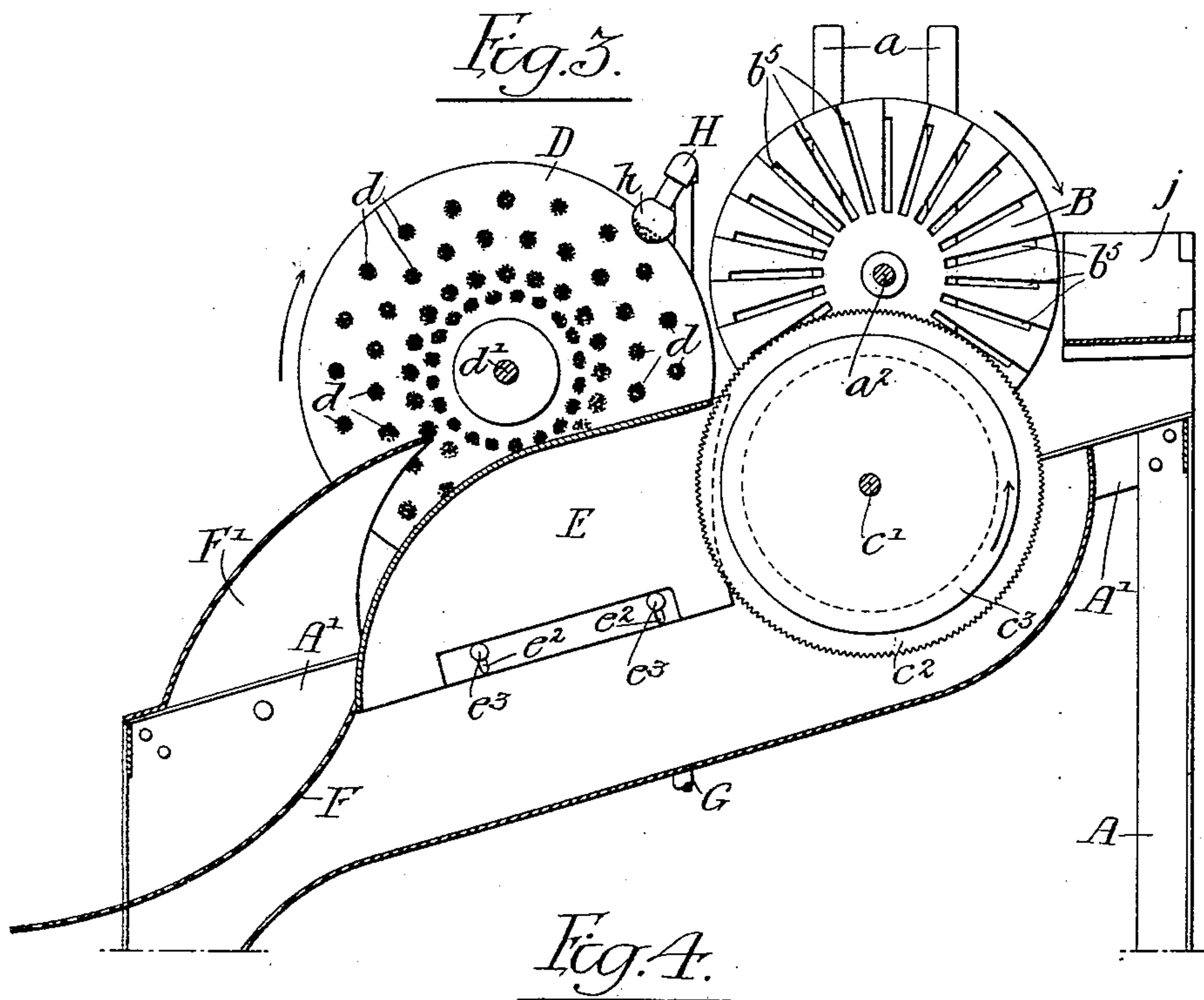
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FISH CLEANING MACHINE.

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2 SHEETS—SHEET 2.



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Chas. W. Ba.  
Titus H. Sons

Inventors:-  
John F. Keller &  
Harvey R. Cartey,  
by their Attorneys  
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# UNITED STATES PATENT OFFICE.

JOHN F. KELLER AND HARVEY R. CARTEY, OF PHILADELPHIA,  
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## FISH-CLEANING MACHINE.

SPECIFICATION forming part of Letters Patent No. 745,861, dated December 1, 1903.

Application filed May 27, 1903. Serial No. 159,014. (No model.)

*To all whom it may concern:*

Be it known that we, JOHN F. KELLER and HARVEY R. CARTEY, citizens of the United States, and residents of Philadelphia, Pennsylvania, have invented certain Improvements in Fish-Cleaning Machines, of which the following is a specification.

Our invention relates to certain improvements in machinery for automatically cleaning fish of various sizes having for its main object the provision of a device of improved construction which shall operate upon fish fed in at one end to open and clean them and to remove scales, slime, &c., finally delivering the fish in condition for packing.

A further object of the invention is to provide a machine of the character described which shall be simple in construction and efficient in action and which shall be thorough in its work.

These objects we attain as hereinafter set forth, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation of our improved machine, showing diagrammatically the belts for operating the various shafts. Fig. 2 is a plan view of the machine, showing the arrangement of the knife and the scaling and cleaning disks. Fig. 3 is a sectional elevation on the line 3 3, Fig. 2. Fig. 4 is a sectional elevation on the line 4 4, Fig. 1. Fig. 5 is a special form of the saw used in connection with our improved machine, and Fig. 6 is a perspective view of the preferred form of the portion of the device designed to remove the entrails from the fish.

In the above drawings, while we have illustrated a framework and various machinery mounted thereon, it is to be understood that in operation this device as a whole may be, and preferably is, inclosed within a casing. The framework consists of vertical standards A, carrying upon them an inclined rectangular frame A'. Projecting upwardly from the inclined frame are two pairs of standards a, serving as guides for bearings a', in which is carried a shaft a<sup>2</sup>. Stops a<sup>3</sup> are provided on the guides a, by which the bearings are prevented from moving down beyond a certain predetermined point, and if it is desired to

increase the force holding said shaft with its parts against the stops a spring a<sup>3</sup>, extending between each bearing a' and the frame of the machine, may be employed.

Carried upon the shaft a<sup>2</sup> are a pair of disk-like pieces b, forming together a scaling-wheel B, similar in shape to a deeply-grooved pulley, and it is to be noted that each of the sections of said wheel are free to slide longitudinally upon their supporting-shaft, being provided, as shown in Fig. 2, with hubs in which are slots b' for the accommodation of screws b<sup>2</sup>, which are firmly screwed into the supporting-shaft. Springs b<sup>3</sup> on the shaft continually tend to force the two parts of the scaling-wheel together. The adjacent surfaces of the parts b are roughened in any desired manner, being in the present instance provided with a series of radial slots b<sup>5</sup>, each of which is made with a relatively sharp projecting edge b<sup>6</sup>. Below said wheel B and carried in fixed bearings c is a shaft c', to which is removably fixed a circular knife or saw c<sup>2</sup>, there being a disk c<sup>3</sup> on each side of the knife, which disks form together a second grooved scaling-wheel C of a width such that it projects between the sections b of the wheel B, as shown best in Fig. 4. As indicated in Fig. 2, the inner or grooved portions of the disks c<sup>3</sup> are formed in a manner similar to that of the wheel B.

To the rear of the two wheels B and C is a third or brush wheel D, which, like the wheels B and C, is formed in two parts, which may be described as consisting of convex disks having brushes d projecting from their adjacent surfaces, the two as a whole forming, as do the other wheels B and C of the machine, a deeply-grooved wheel, the groove of said wheel, however, having its sides at a much greater angle than that found in the case of the other wheels. The brush-wheel D is carried upon a shaft d', supported upon a pair of standards d<sup>2</sup>, and has under it a section E for removing the entrails of the fish. This piece tapers from front to rear, as shown in Fig. 6, and has upon its sides series of metallic points or projections e, while upon its top and back portions are a series of brushes e<sup>5</sup>. On both sides along its lower edges are projecting parts e', in which are formed vertical



slots  $e^2$  for the reception of bolts  $e^3$ , which pass through the side members of the frame  $A'$  and are provided with thumb-nuts  $e^4$ , whereby the vertical height of the section E may be adjusted. The front portion of said section E is made to extend immediately in the rear of the scaling-wheel C and is preferably grooved for a short distance to accommodate the circular knife, as shown in Figs. 1 and 3. The lower rear surface of the section E is continued by a perforated trough F, over which a cover F' extends, cleaned fish being delivered into any desired receptacle suitably placed relatively to said trough. A trough G is carried by the frame of the machine in an inclined position and is extended under the wheel C and the guiding-trough F, as well as under the brush-wheel D, so as to catch and deliver to any suitable receptacle or conduit the waste material falling into it.

A water-pipe H is supported on the frame of the machine and is provided with a head or nozzle  $h$ , through which a stream of water may be strongly spread or forced against the brush-wheel D and the entrails-removing section E.

In front of the scaling-wheel B we preferably place a pair of hinged plates  $j$  at an angle to one another and arranged so as to form a triangular cavity within a guide box or casing J. Springs  $j'$  continually tend to retain the plates  $j$  in the position shown in Fig. 2 and so act that the line along which said plates contact is substantially coincident with the plane of the circular knife.

In operation we preferably employ a link belt to connect the shafts  $a^2$  and  $d'$ , such connection being shown diagrammatically in Fig. 1, and it will be understood that in practice the belt connecting the shaft  $a^2$  with the shaft  $c'$  is sufficiently slack to permit of motion of the bearings  $a'$  in their guides  $a$ . The machine is preferably operated by means of power applied to the shaft  $c'$  by means of a pulley  $c^8$ . A fish to be cleaned is fed back down between the plates  $j$ , which are forced apart thereby, so as to permit it to come in contact with the circular knife and be cut open. The scaling-wheels B and C, rotating as indicated by the arrows in Fig. 3 and at a relatively high velocity, remove the scales and deliver the fish to the brush-wheel, which is revolved at a velocity sufficient not only to remove any remaining scales and slime, but to move it over the roughened surface or projections  $e$  and brushes  $e^5$  upon the section E and then deliver it to the trough formed by the parts F and F'. The entrails are caught and retained upon the points or projections of the section E, being dislodged therefrom by the stream of water and caused to pass into the trough G.

In case a fish of greater height of body than usual should be introduced it would force upwardly the wheel B, the bearings of whose sup-

porting-shaft  $a^2$  are free to slide upon their guide  $a$ , as above described, and if the width of the fish is abnormal the two sections  $b$  of the wheel B are forced apart against the action of the springs  $b^3$  to permit of its passage. If very small fish are to be operated upon, we may, if desired, employ rings or liners having a cross-sectional shape, as indicated at  $c^6$  in Fig. 4, upon each side of the circular knife.

Should it be desired to remove the backbone altogether, we may employ a pair of parallel knives  $c^7$ , placed between the two wheel-sections  $c^3$ , as indicated in Fig. 5, the action of such a knife being to cut the rib-bones on each side of the backbone in such a way that this is altogether separated from the body of the fish and is delivered independently thereof.

We claim as our invention—

1. The combination in a device for cleaning fish, of a circular knife, means for holding a fish symmetrically with regard to said knife, and a scaling-wheel for moving the fish past the knife, said scaling-wheel being made in sections automatically movable toward and from each other, substantially as described.

2. The combination in a device for cleaning fish, of a circular knife, means for holding a fish symmetrically with regard to said knife, and a scaling-wheel for moving the fish past the knife, with a second scaling-wheel supported concentrically with said knife, substantially as described.

3. The combination in a device for cleaning fish, of a circular knife, means for holding a fish symmetrically with regard to said knife, and a wheel for moving the fish past the knife, said wheel having a portion of its surface provided with means for removing scales and being free to move bodily toward and from said circular knife, substantially as described.

4. In a fish-cleaning machine, the combination of a circular knife, a scaling-wheel having a section on each side of the knife, a second wheel having its sides extended parallel with and overlapping the first wheel and the knife, substantially as described.

5. In a fish-cleaning machine, the combination of a circular knife, a scaling-wheel having a section on each side of the knife, with a second wheel having its sides extended parallel with and overlapping the first wheel and the knife, said second wheel being free to move toward and from the knife, substantially as described.

6. In a fish-cleaning machine, the combination of a circular saw, a scaling-wheel adjacent to said saw and having side portions extending on both sides of the saw, with a cleaning-wheel in the rear of the saw and the scaling-wheel, substantially as described.

7. In a fish-cleaning machine, the combination of a circular saw, a scaling-wheel adjacent to said saw and having side portions extending on both sides of the saw, with a cleaning-wheel in the rear of the saw and the scaling-wheel, and a fixed entrails-removing sec-



tion extending under the cleaning-wheel and adjacent to the saw, substantially as described.

8. The combination of a circular saw, a frame carrying the same, an entrails-removing section carried upon the frame and provided with a series of projections, a brush-wheel and a scaling-wheel for feeding the fish past the saw to the brush-wheel, substantially as described.

9. In a fish-cleaning machine, the combination of a frame, a shaft carried thereby, a circular saw on the shaft, a second shaft, a scaling-wheel made in two sections carried thereby by said sections having slotted hubs and screws passing through said slots in the hubs into the shaft, with means for normally retaining said sections adjacent to one another, substantially as described.

10. In a fish-cleaning machine the combination of means for opening the bodies of fish, means for removing the scales, including a brush-wheel having a concave periphery, with a fixed section carrying a series of relatively rigid and unyielding projections placed to engage and remove the entrails of fish, said fixed section extending into the concave portion of the brush-wheel, substantially as described.

11. The combination of a fish-cleaning machine, of a revolving knife, a grooved piece on each side of said knife, a scaling-wheel adjacent to the knife having through it a series of slots and constructed to move the fish through the machine and simultaneously remove the scales therefrom, substantially as described.

12. In a fish-cleaning machine, the combination of a pair of revolubly-supported parallel knife-blades, a grooved wheel whereby a fish is kept in position, and a piece adjacent to said blades whereby the depth of cut made by them is regulated, substantially as described.

13. In a fish-cleaning machine, the combination of a pair of parallel knife-blades, means for supporting the same so that they are free to revolve, means regulating the depth of cut of said blades, and a concave scaling-wheel having roughened surfaces adjacent to the blades, said wheel coöperating with the cut-regulating means to guide the passage of a fish operated upon, substantially as described.

14. In a fish-cleaning machine, the combination of a revolubly-supported knife, disks on either side of said knife for regulating the

depth of cut of the same, and a scaling-wheel composed of two disks extending on each side of said knife, substantially as described.

15. In a fish-cleaning machine, the combination of means for making a cut in bodies of fish to be cleaned, means for propelling fish through the machine, a concave brush-wheel having two side members projecting radially from its hub and a vertically-adjustable entrails-removing device, said device including a wedge-shaped portion provided with a series of relatively rigid and unyielding projections and extending between the said members of the brush-wheel, substantially as described.

16. In a fish-cleaning machine, the combination of means for making a cut in the bodies of fish to be cleaned, means for propelling fish through the machine, and an entrails-removing section consisting of a tapered piece having rigidly set in its surface a series of projections and having upon it fixed brushes, substantially as described.

17. In a fish-cleaning machine, the combination of means for making a cut in the bodies of fish to be cleaned, means for propelling fish through the machine, and an entrails-removing section tapering from front to rear, having upon its sides a series of projections and provided on its rear portion with a series of brushes, substantially as described.

18. In a fish-cleaning machine, the combination of a frame, a shaft carrying a knife, said shaft having bearings fixed on said frame, a second shaft having bearings free to move toward and from the first shaft, a scaling-wheel carried by said second shaft, means for holding the second shaft toward the first shaft, with means for removing the entrails from the fish after the knife has operated upon the same, substantially as described.

19. In a fish-cleaning machine, the combination of a knife for opening fish, a scaling-wheel supported adjacent to said knife and having portions projecting on each side thereof with a wheel placed to the rear of the scaling-wheel and having a series of brushes projecting from its surface and a device adjacent to said latter wheel for removing the entrails from the fish, substantially as described.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

JOHN F. KELLER.

HARVEY R. CARTEY.

Witnesses:

WILLIAM E. BRADLEY,

JOS. H. KLEIN.