

(No Model.)

2 Sheets—Sheet 1.

S. K. TODD.

MACHINE FOR HULLING AND CLEANING WHEAT.

No. 276,200.

Patented Apr. 24, 1883.

Fig. 1.

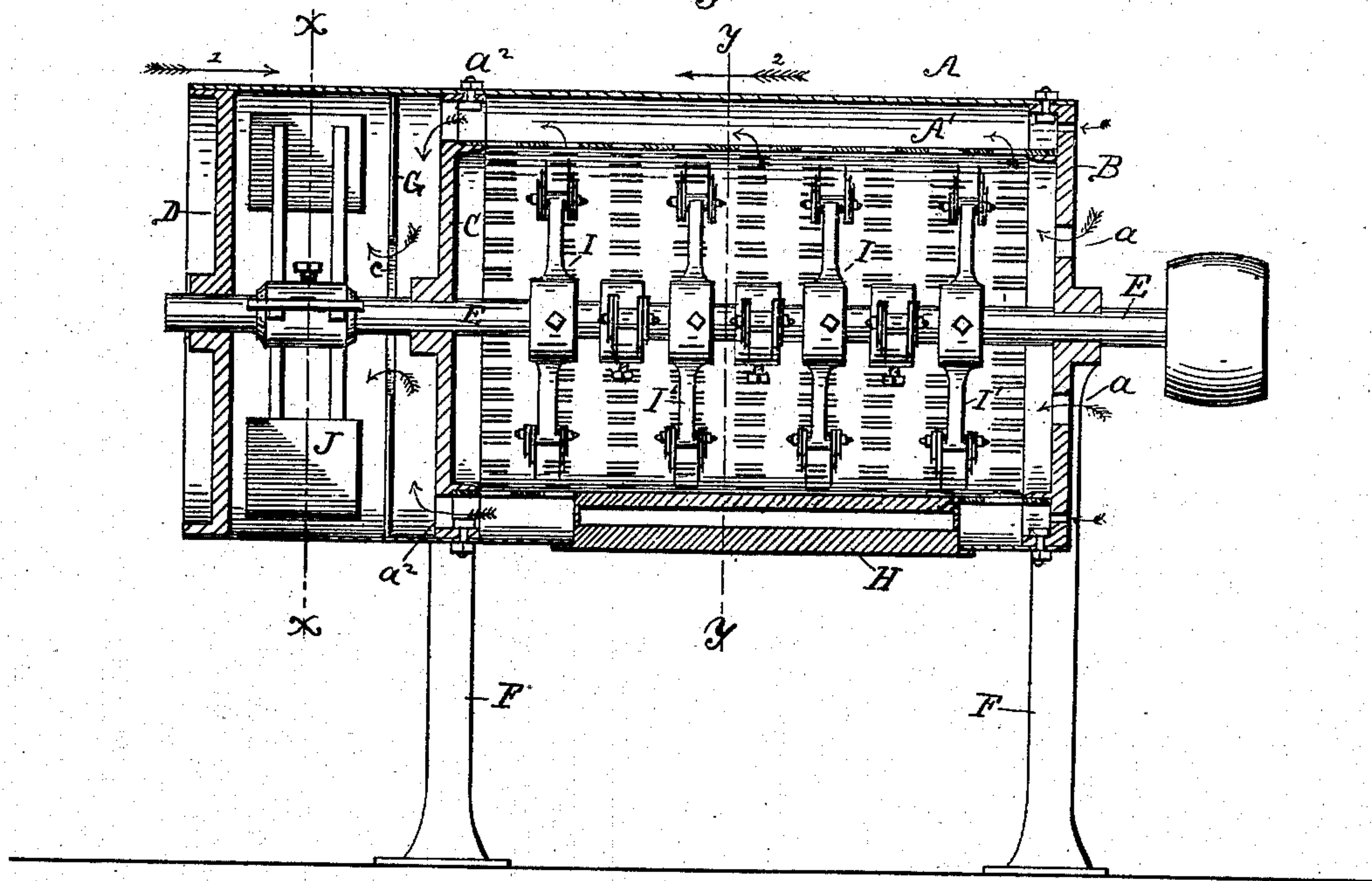


Fig. 4.

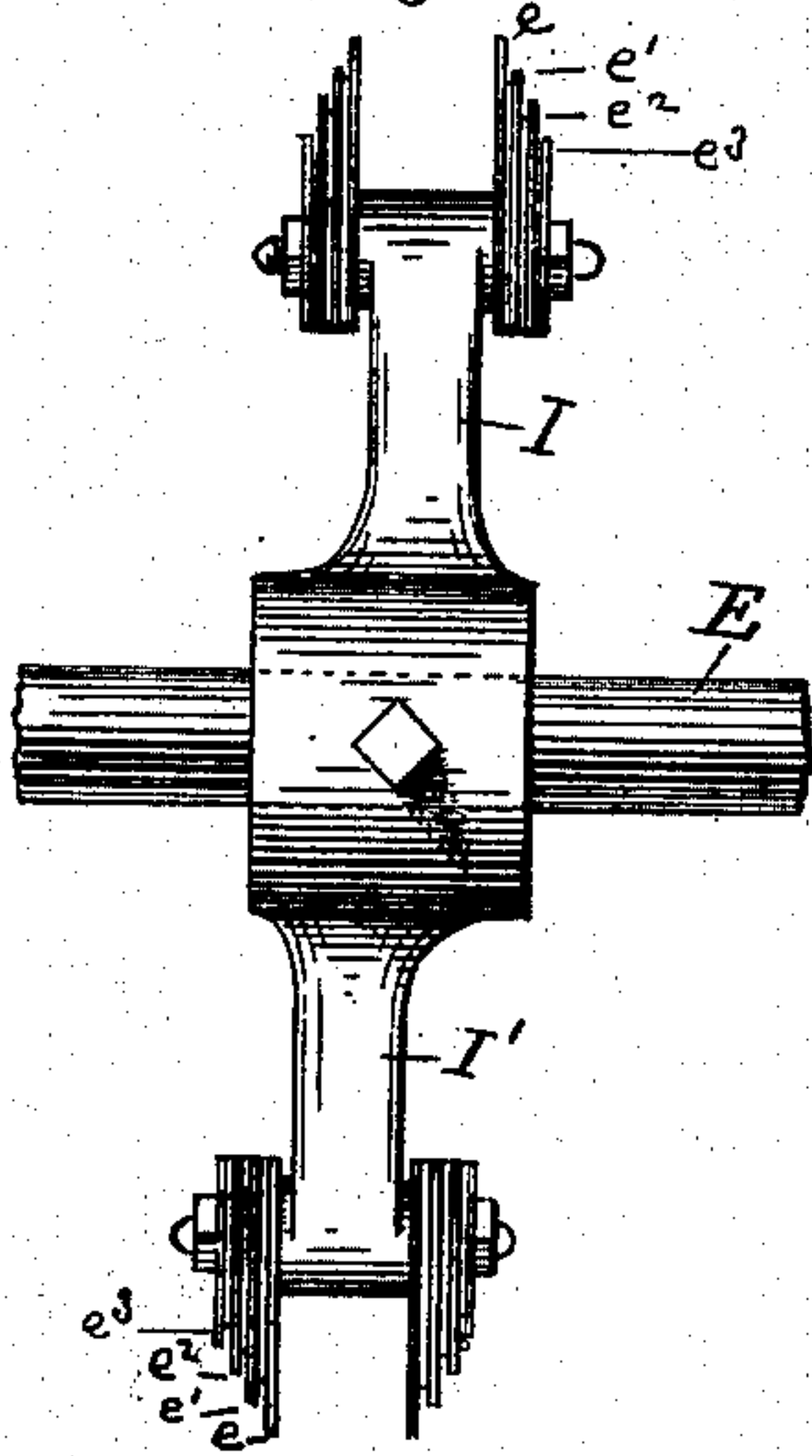
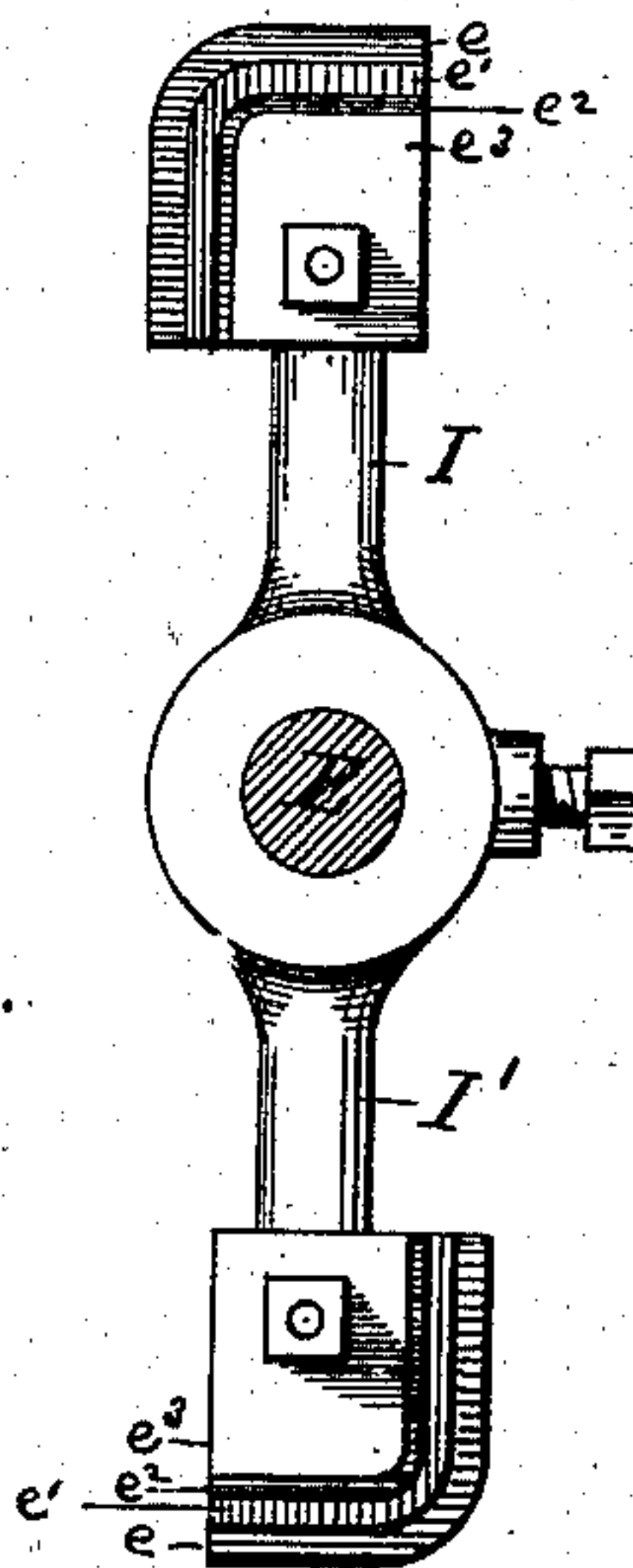


Fig. 5.



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Fig. 2.

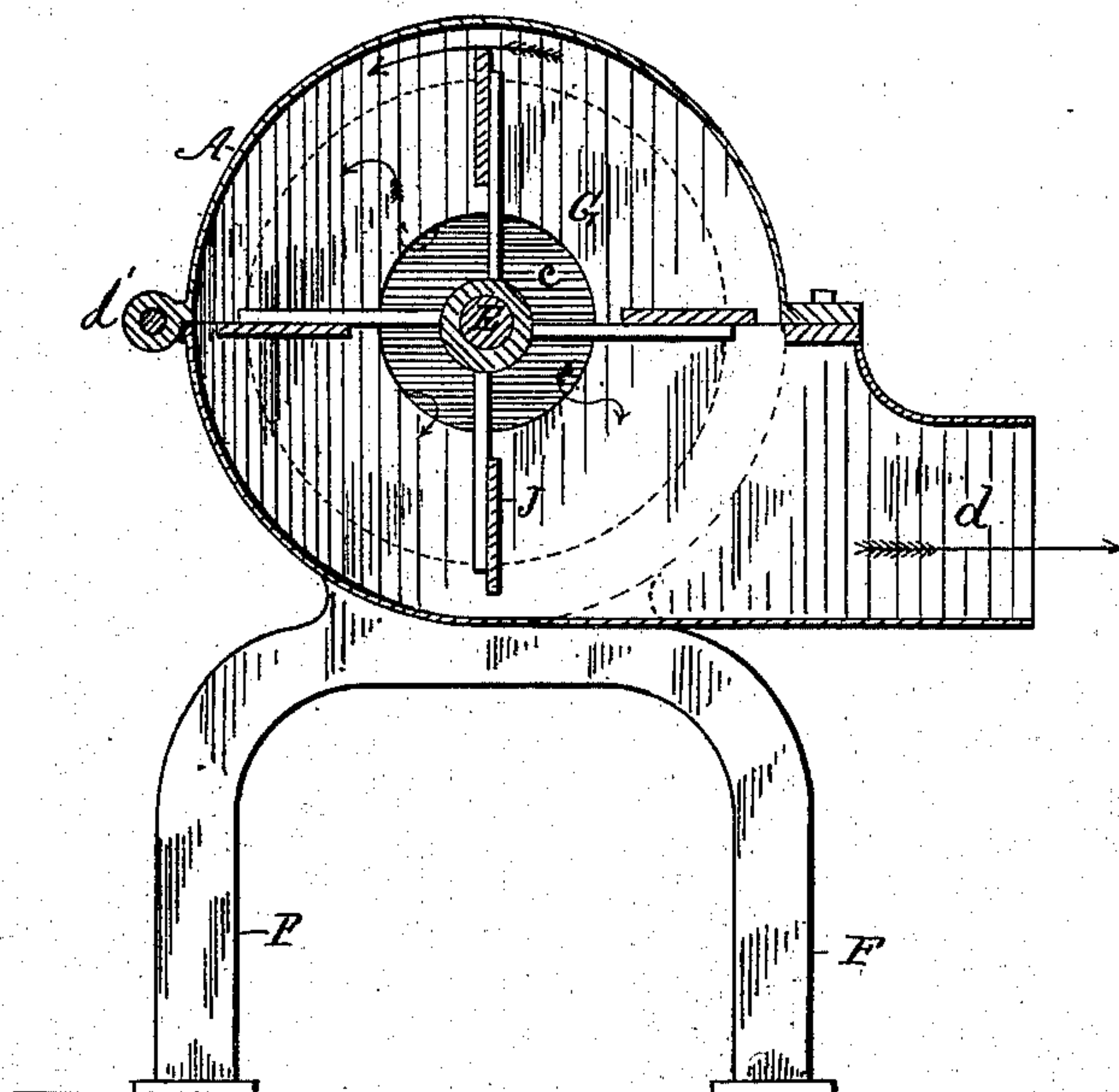
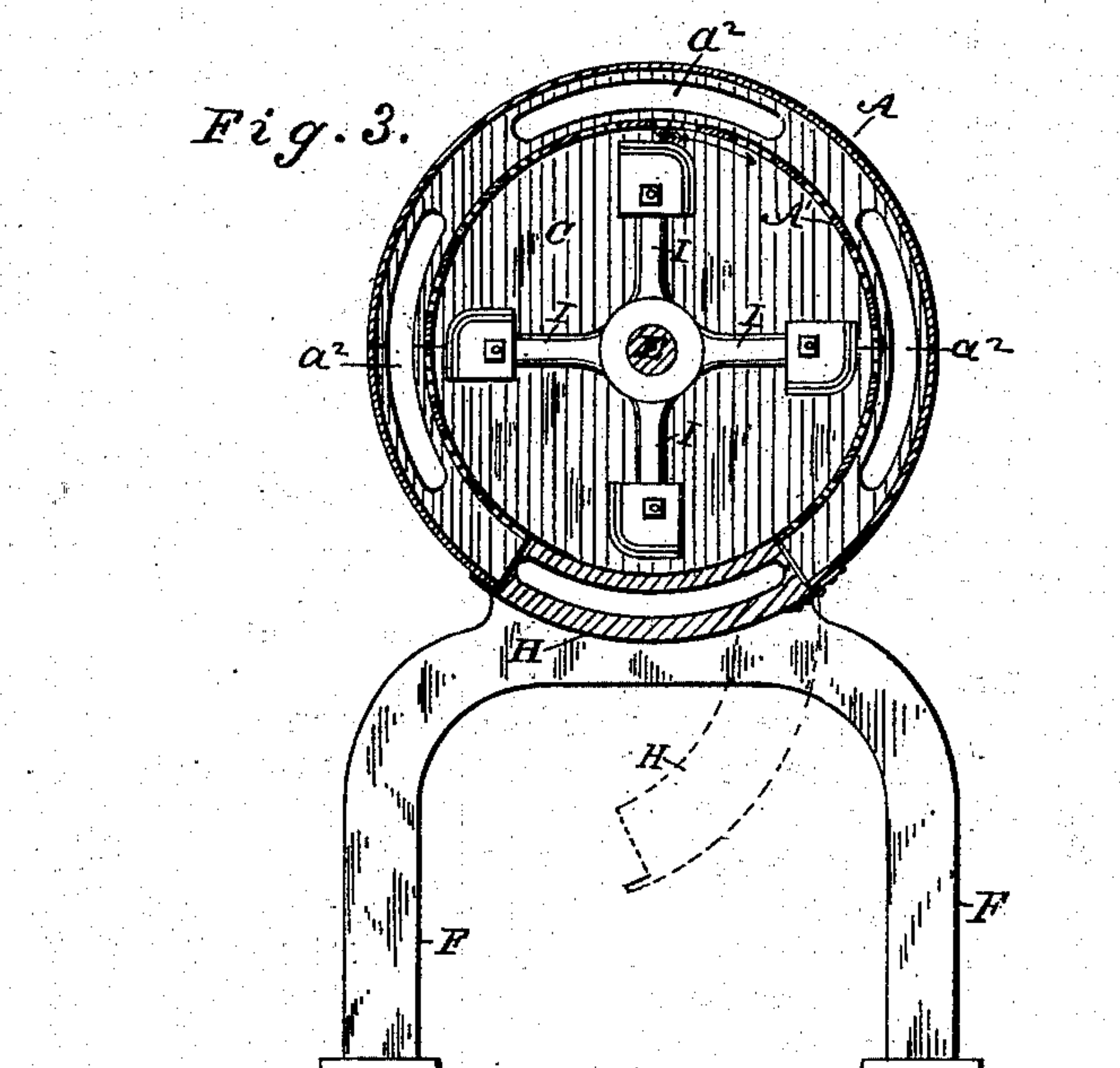


Fig. 3.



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UNITED STATES PATENT OFFICE.

SAMUEL K. TODD, OF EUGENE, INDIANA.

MACHINE FOR HULLING AND CLEANING WHEAT.

SPECIFICATION forming part of Letters Patent No. 276,200, dated April 24, 1883.

Application filed August 19, 1882. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL K. TODD, of Eugene, in the county of Vermillion and State of Indiana, have invented a new and useful Improvement in Machines for Hulling and Cleaning Wheat; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to an improvement in machines for cleaning wheat and other grains and removing the skin and fuzz or brush on the end of the kernel preparatory to grinding. I employ a double cylinder, the outer one being imperforate and extended lengthwise beyond the inner one, which is perforated and separated from the outer by a narrow annular space. A fan is placed at one end of the inner cylinder, and is inclosed by the outer one. The inner cylinder incloses a rotating shaft carrying arms, to which knives are attached for use in cleaning and decorticating the grain.

The details of construction, arrangement, and combination of parts are as hereinafter described, the novel features thereof being set forth in the claims.

In the drawings, Figure 1 is a vertical longitudinal section. Fig. 2 is a vertical cross-section through the line $x x$ of Fig. 1, looking in the direction of the arrow 1. Fig. 3 is a vertical cross-section through the line $y y$ of Fig. 1, looking in the direction of the arrow 2. Figs. 4 and 5 are respectively a front and side-view of the knives and knife-arms.

A A' represent the double cylinders, made of heavy sheet metal, the inner one, A', of which is provided with numerous slits or perforations, and extends from the head B to the head C. The outer one of these cylinders is imperforate, and extends from the head B to the head D. The heads B and C are formed with flanges, to which the two cylinders are bolted, and they are formed also with bearings for the longitudinal rotary shaft E, and with supporting-legs F. The shaft E extends entirely through the case, and inside the cylinder A' is provided between the heads B and C with arms bearing knives, and between the heads C and D is provided with arms and blades to constitute a suction-fan J. The head B is pro-

vided with openings a , through which air is admitted to the interior of the inner cylinder, and the head C is provided with openings a^2 , (see Figs. 1 and 3,) through which the air may pass from the space between the two cylinders to the fan-chamber.

G is a partition placed between the head C and the fan, and attached to the outer cylinder. This partition has a central opening, c , around the main shaft, and serves to direct the air from between the cylinders into the fan at a point near the center, so that it may be discharged from the fan tangentially through the air-chute d , Fig. 2.

In constructing the cylinders A A' and the heads B C D they are each and all made in two pieces, joined together at the middle horizontal line, as shown in Fig. 2, so that the entire top half of the case may be lifted off, leaving the fan and knives exposed for inspection or repair. For filling the machine with its charge of wheat the upper section of the case may be hinged at one side, as indicated at d' , Fig. 2, so as to be thrown back, or a separate door in the upper portion may be provided. After grain has been sufficiently acted upon it is to be removed in the bulk through a hinged door, H, at the bottom, opening through both the inner and the outer cylinders.

The knives $e e' e^2 e^3$ are fastened to the double arms I I', which have a central hub portion, that is secured upon the shaft by a set-screw or key, and from which the arms extend radially, one being offset from the plane of the other, for the purpose hereinafter described. The knives consist of two, three, or more plates, $e e' e^2 e^3$, laid parallel to each other, and separated by alternating filling-pieces, and the whole bolted together. The edges of said plates are set back one over the other, so as to give each grain several successive impacts or strokes as the knives pass it, which very greatly facilitates the hulling and cleaning operation. Of these knives there are two bolted to each end of the double arm, the same being arranged at right angles to the shaft E, and hence parallel to the plane of rotation, and the planes of the knives of one end of the arm pass between the planes of the knives at the other end by reason of the arrangement of the arms in different planes, thus causing all the grain to be acted upon.

By making the knives as described I not only secure a much more active hulling operation, but the knives more completely penetrate the crevice or crease in the grain of wheat, and, besides, when the knives become dull on one edge they may be taken off of one side of the arm and attached to the other side of the arm with their sharp edges projecting outwardly, thus avoiding the necessity for grinding the knives.

In the operation of the machine as thus described a charge of grain is placed within the inner cylinder and the shaft rotated at a high rate of speed. This action causes the knives to repeatedly traverse every portion of the mass of grain, cutting off the fuz at the end, removing more or less of the outer skin or cuticle, and perfectly cleaning the surface and the crevice of the berry from all adhering impurities. These particles which are dislodged are drawn by the fan through the perforations of the inner cylinders, and, passing through the openings in heads C and partition G, are then discharged by the fan through the air-chute, which fan it will be seen is on the same shaft with the knives and revolves at the same rate of speed. In operating with a machine of small size, of about twelve inches diameter for the inner cylinder, I have found that at a speed of twelve hundred revolutions to the minute the charge of wheat would be sufficiently hulled and cleaned in from two to five minutes.

Now, in defining my invention with greater clearness, I would state that I am aware that a perforated case with a rotary shaft armed with cutters is not new in itself, as it has heretofore been employed in hominy-mills, sausage-cutters, and other like uses.

I am also aware that an outer closed case and an inner perforated or woven cylinder has been employed in smut-machines in connection with a rotary shaft bearing cleaning-brushes and a fan.

I do not confine my invention to cleaning wheat; but may use it for a hominy-mill, rice-cleaner, or other analogous purpose.

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

1. The rotary shaft having knife-carrying arms and a fan attached, the case composed of two cylinders, one inclosing the other, which is perforated, the outer being also extended at one end to inclose the fan and form a cover therefor, a partition arranged between the inner cylinder and fan, and provided with an opening which allows communication between the fan-chambers and annular space surrounding the inner cylinder, all combined as shown and described, to operate as specified.

2. The combination of the imperforate cylinder A, perforated cylinder A', heads B C D, partition G, shaft E, bearing knives revolving in the perforated cylinder, and a fan upon the end of the same, substantially as shown and described.

3. The combination, with the cylinder and shaft having arms, of one or more sets of knives, consisting of a series of blades, $e e' e^2 e^3$, separated from each other, as specified, and arranged parallel to the plane in which they revolve, and with their edges set back one of another, so that they are successively at different distances from the axis, as shown and described.

4. The combination, with the inclosing cylinder A' and shaft E, of the double arms I I', set in different planes and connected to a common hub, and a pair of knives bolted to the opposite sides of each end of the arm, as shown and described.

SAMUEL K. TODD.

Witnesses:

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