

(No Model.)

3 Sheets—Sheet 1.

C. M. YOUNG.
ROTARY PUMP.

No. 410,747.

Patented Sept. 10, 1889.

FIG. 3

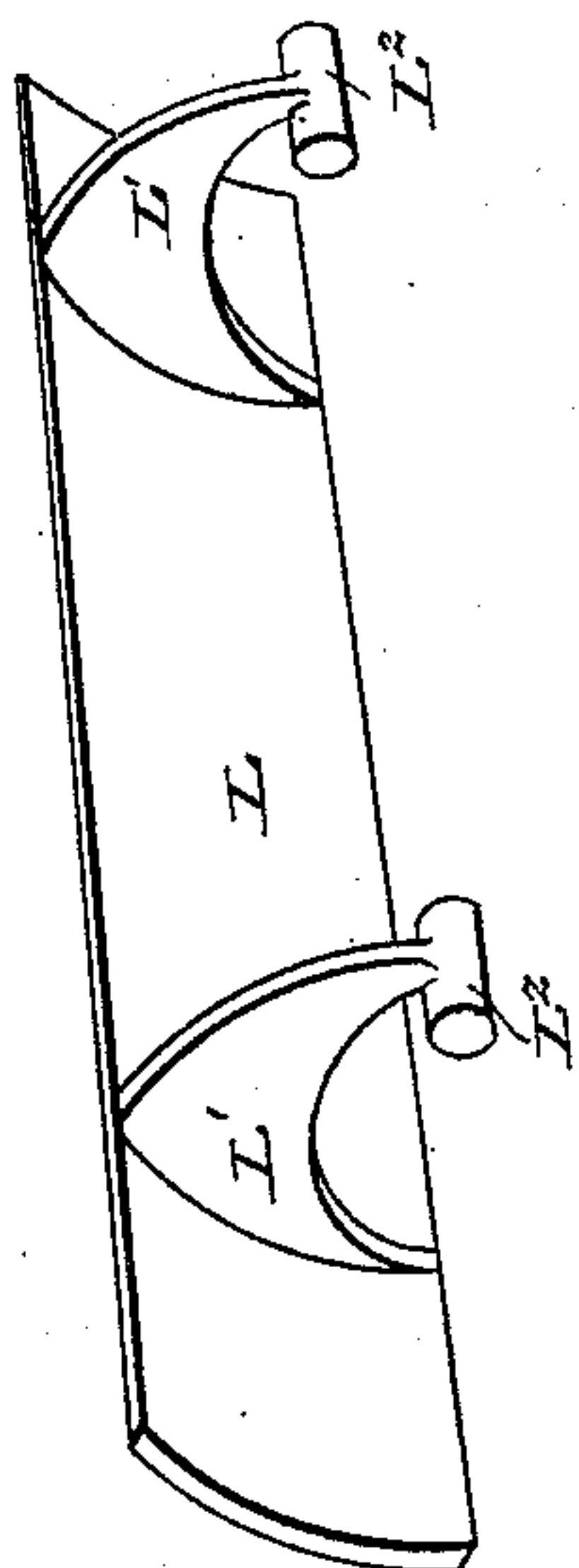


FIG. 4.

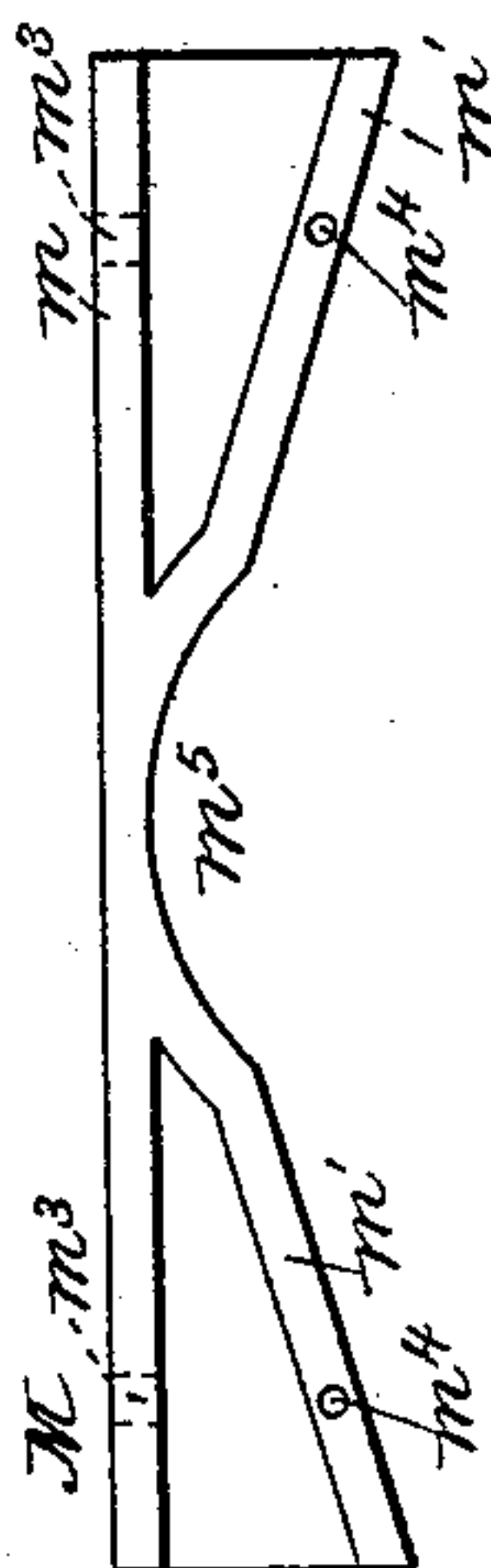
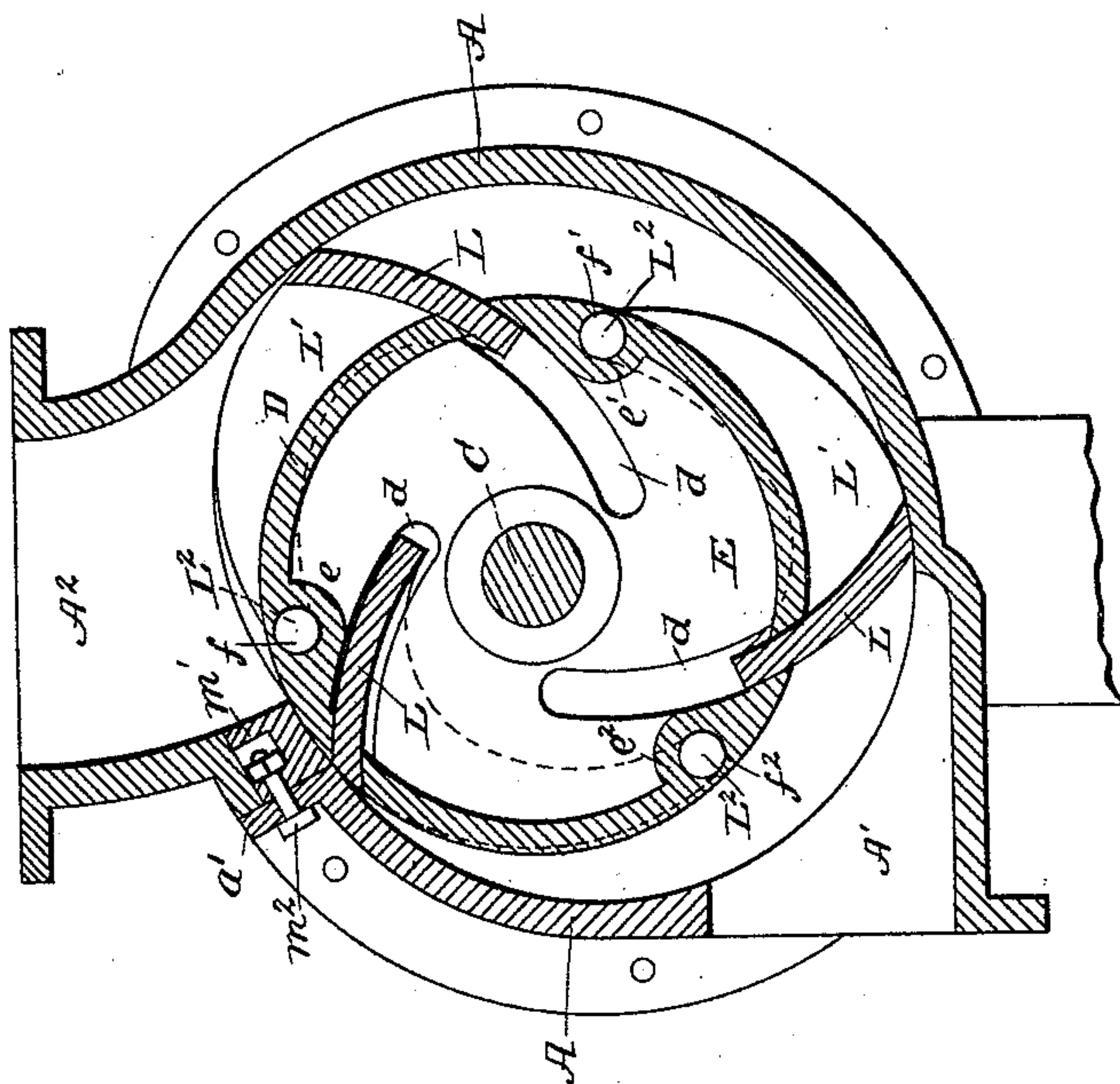


FIG. 1.



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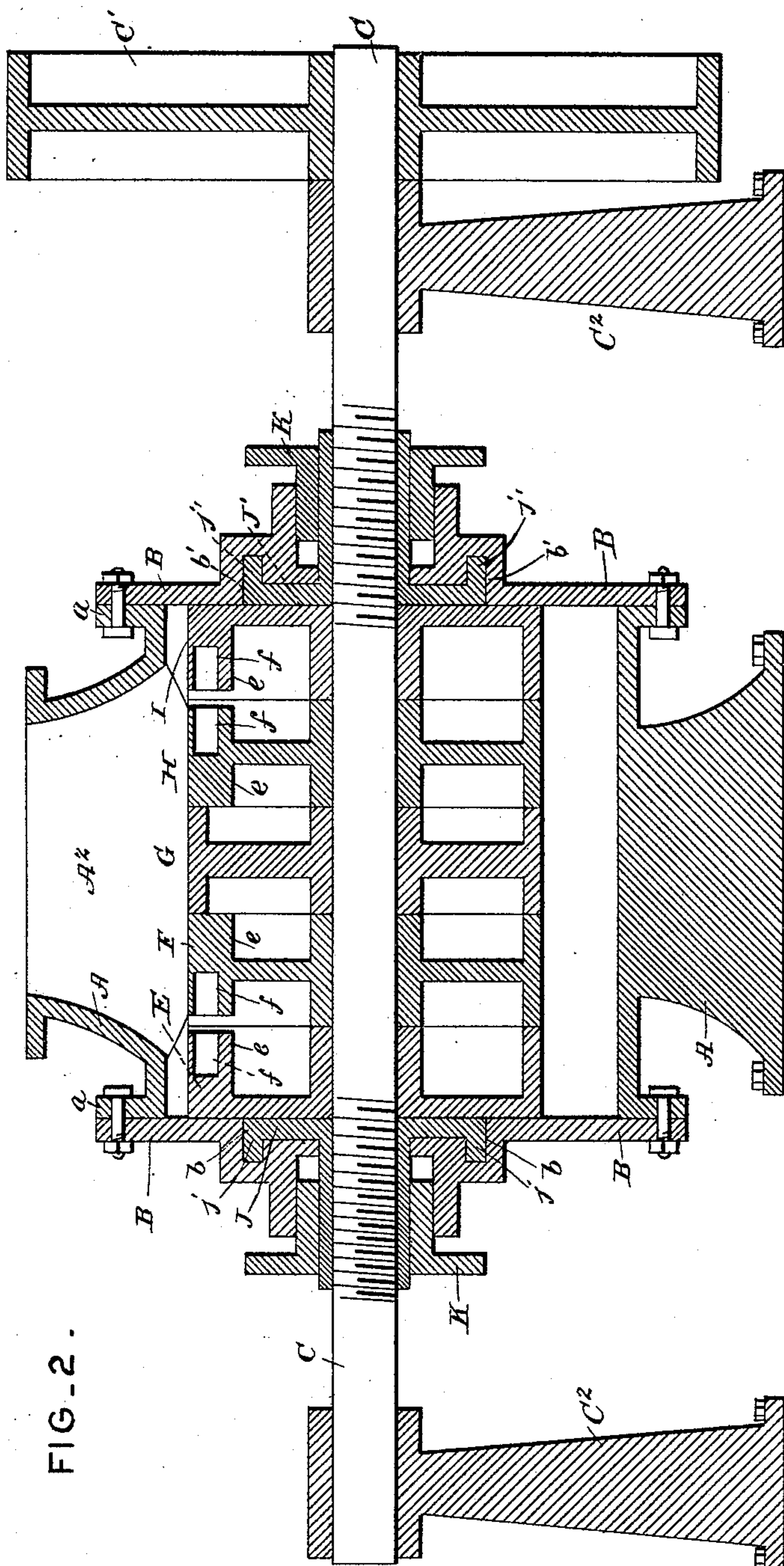


FIG. 2.

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FIG. 6—

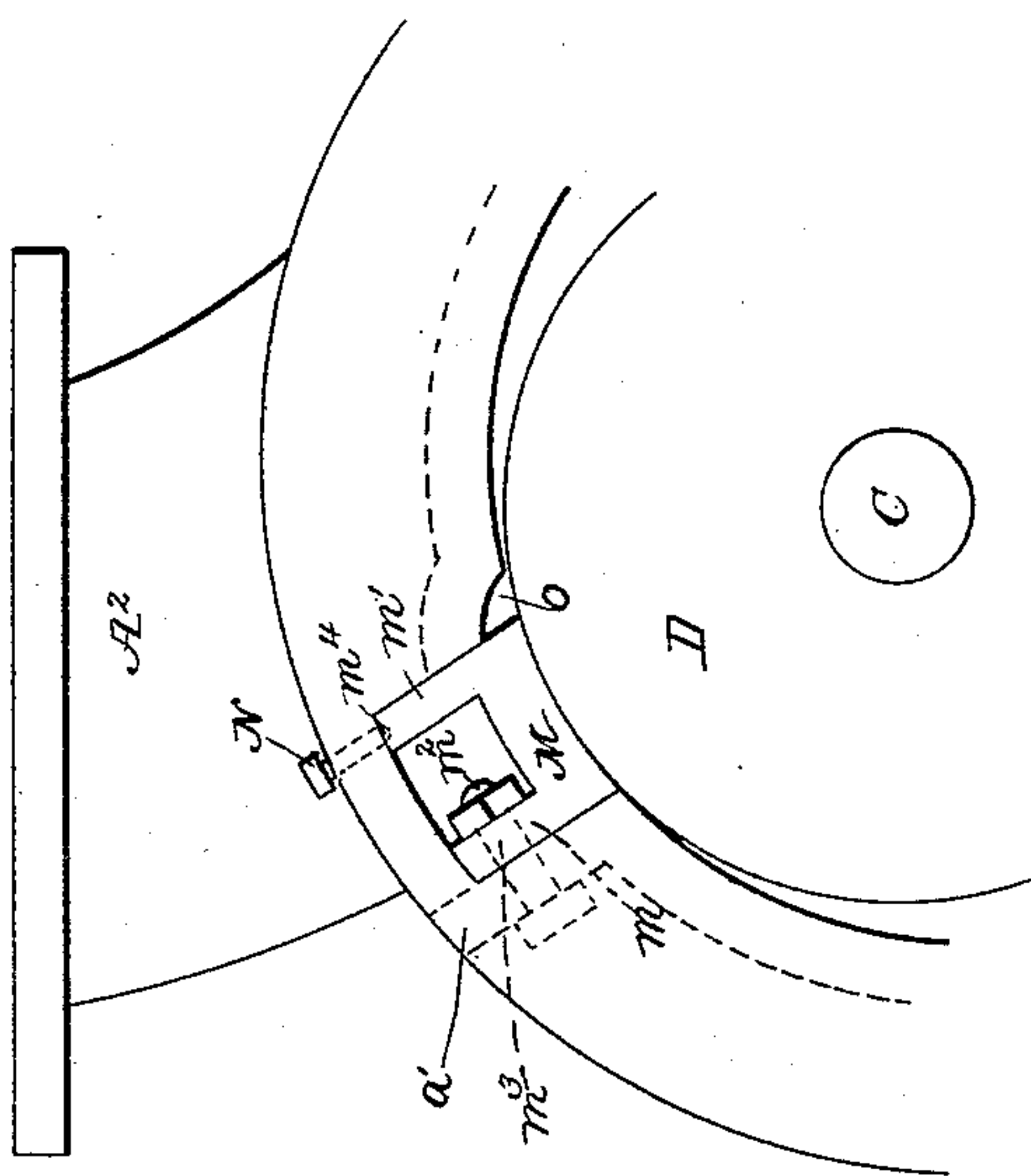
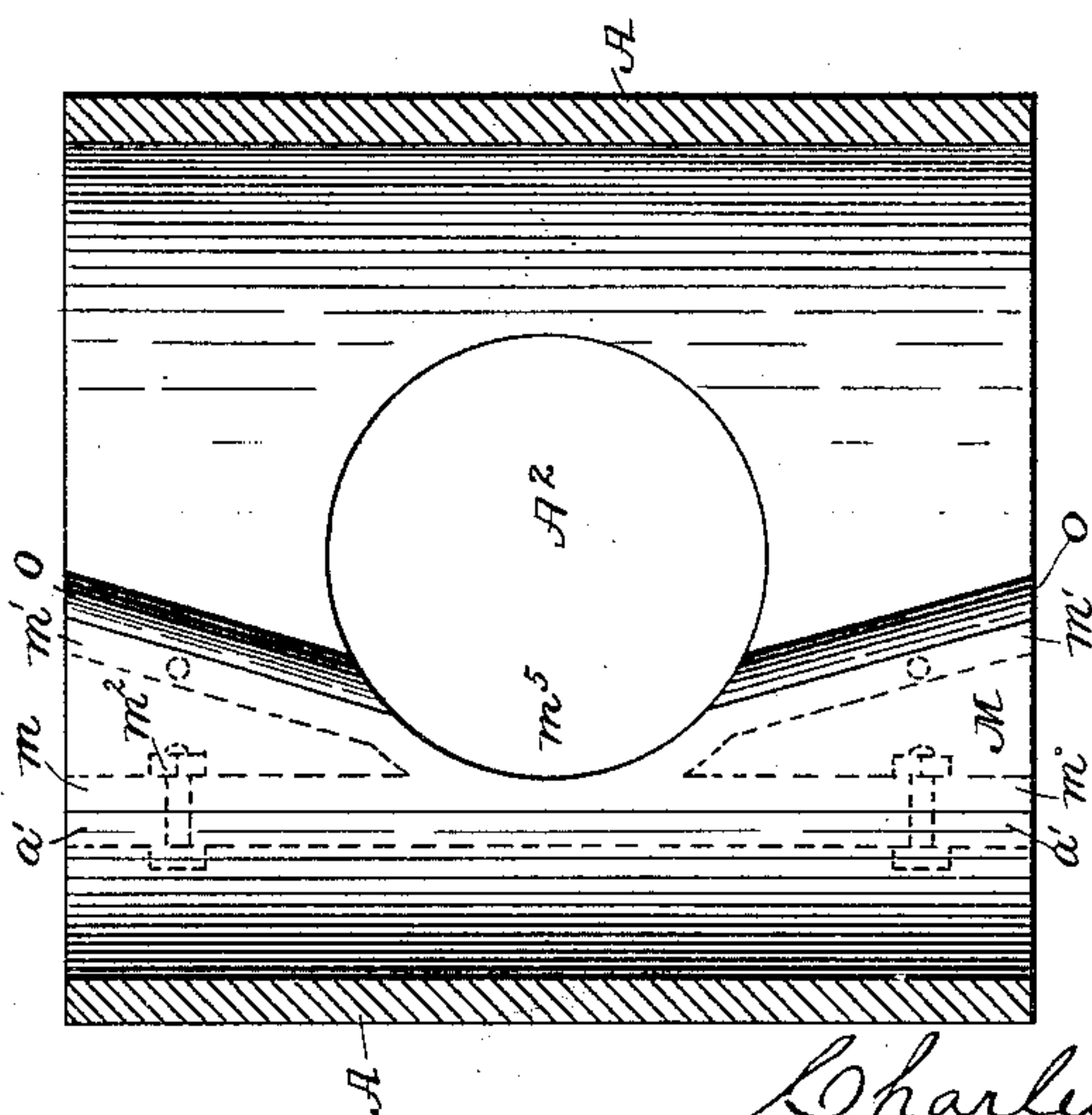


FIG. 5—



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UNITED STATES PATENT OFFICE.

CHARLES M. YOUNG, OF CORRY, PENNSYLVANIA.

ROTARY PUMP.

SPECIFICATION forming part of Letters Patent No. 410,747, dated September 10, 1889.

Application filed May 7, 1889. Serial No. 309,942. (No model.)

To all whom it may concern:

Be it known that I, CHARLES M. YOUNG, of Corry, county of Erie, and State of Pennsylvania, have invented a new and useful Improvement in Rotary Pumps, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification.

My invention relates to that class of rotary pumps known as "double-piston;" and it consists in a novel construction of cylinder, in a novel form of piston or bucket, and in the manner of mounting the pistons upon the cylinder; also, in a novel form of seat or adjustable plate and means for securing and adjusting the same, and in certain other details of construction and arrangement hereinafter described and claimed.

In the accompanying drawings, Figure 1 represents a vertical transverse section through my improved pump. Fig. 2 is a longitudinal vertical section of the same, showing the driving-shaft in elevation. Fig. 3 is a detached perspective view of one of the buckets, valves, or pistons. Fig. 4 is a plan view of the seat detached. Fig. 5 is a longitudinal horizontal section through the casing of the pump, looking from the inside thereof toward the outlet or discharge opening, the cylinder and its pistons being removed to show the location and arrangement of the seat and the sediment-grooves; and Fig. 6 is a broken side elevation of the pump with the head or side plate removed.

A represents the casing of my improved pump. This casing is substantially elliptical in contour, as shown, and is provided with an inlet or supply aperture A' , and also with an outlet or discharge orifice A^2 , as indicated. This casing A is provided at its edges with suitable flanges a , (see Fig. 2,) to which heads or plates B are bolted, as shown.

C indicates the driving-shaft, to which the cylinder of the pump is secured, as hereinafter described. Said shaft is provided with the ordinary driving-pulley C' , through which motion is imparted to it, and is supported in suitable bearing-standards C^2 . The cylinder,

which is represented by D in Figs. 1 and 6, is composed of a number of sections, indicated at E F G H I, each of which has a central hub, an outer rim or periphery, and a connecting-web similar to an ordinary driving pulley or wheel. In Fig. 2 I have shown five of these sections, though it will be apparent that a greater or less number may be employed. The sections E F H I are each provided with enlargements, as indicated at e e' e^2 , which are recessed, as shown at f , f' , and f^2 , for a purpose to be described. These sections E, F, G, H, and I are mounted on the shaft C, and are confined between two nuts or internally-threaded collars J J', which are screwed on the shaft C, as shown in Fig. 2, and bear against the outer sections E and I of the cylinder D, thus clamping all the sections between them and giving them a fixed relation to shaft C. The collars J and J' are each provided with outwardly-extending flanges j j' , which enter and travel in corresponding grooves b b' in the head-plates B, above referred to, which construction secures great steadiness in the operation of the pump and serves to prevent the escape of water from the cylinder-chamber. The head-plates B have hollow or recessed hubs surrounding the nuts or collars J J', into which packing-boxes K K are fitted, said boxes also surrounding the collars J J', thus effectually preventing escape of water from the interior of the casing.

L L represent the pistons, valves, or buckets, which consist each of a plate, which is by preference shown curved in cross-section, and is of a length from end to end corresponding to the distance between the head-plates B B of the casing. Extending from the face of said piston-plates are arms L' , of which by preference there are two, as shown in the detached view, Fig. 3, and on the ends of these arms are formed trunnions or pivots L^2 . These trunnions are adapted to fit into the recesses f , f' , and f^2 in the cylinder above referred to. By reference to Fig. 3 of the drawings it will be seen that the arms L' are located at points intermediate the ends of the plate L. By this arrangement and location of the arms L' , I

am enabled to make the plate L lighter and the piston stronger than if the arms were placed at the ends of the plate L, and it will also be apparent that the lighter the piston or valve the less jar or pounding there will be in the operation of the pump. At the points where the depressions e , e' , and e^2 and recesses f , f' , f^2 occur the adjacent edges of the peripheries of the sections E F and H I are cut away to allow the passage of the arms L' of the piston, and the webs of all the sections E, F, G, H, and I are provided with curved slots d , as shown in Fig. 1, for the passage of the plates L of the pistons. By this construction the pistons or valves are pivotally connected to the cylinder and are adapted to be folded into the cylinder until the outer edges of the arms L' coincide with the plane of the periphery of the cylinder or to be thrown outward by centrifugal action when the shaft C is revolved.

M indicates a false seat, formed by preference as shown in plan, Fig. 4, the lower face being plane and slightly concave, corresponding to the periphery of the cylinder and on its upper face provided with the ribs or flanges m m' . This seat is arranged with relation to the casing A and cylinder D as shown in Figs. 1 and 6, being secured by bolts or screws m^2 to an upright flange a' of the casing, said bolts passing through perforations m^3 , Fig. 4, in the rear flange of the seat M.

N indicates set-screws, which pass through the upper portion of the casing and bear upon the forward flange m' of the seat M at suitable points m^4 , (see Figs. 4 and 5,) by means of which wear upon said seat may be taken up or compensated for, said screws serving to depress the seat and preserve good contact between the contiguous working-faces of the cylinder and its seat. The importance of preserving a close relation between these parts will be readily apparent.

In order to get rid of the sediment which is apt to accumulate at the point where the cylinder comes in contact with the casing, or in the present case at the forward edge m' of the false seat M, I incline said forward edge from the outer ends of the seat inward toward the center, which is rounded out, as shown at m^5 , to coincide or be in alignment with the lower edge of the discharge-orifice A^2 , and at the point where the casing A abuts against this forward edge of the seat M, I form grooves O, which extend along the inclined edge M' of the seat until they reach the edge of the discharge-orifice. It will thus be seen that any sediment which might otherwise accumulate and become packed and clogged at this point will by this arrangement be carried along the grooves to the discharge-opening, where the force of the volume of water will expel it.

In applying the cylinder D to its shaft C

one of the nuts or collars—as, for instance, J—is first secured on the shaft C. Two cylinder-sections E and F are then brought together and the trunnions L^2 of the piston placed in position. In like manner the sections H and I are brought together to receive the trunnions L^2 on the other arm of the piston. The central section G is then inserted and all the sections then moved on the shaft C, when the other nut or collar J' is screwed firmly in place, the whole placed in the elliptical casing, and the head-plates bolted in place.

Having now described my invention, I claim as new—

1. The combination, with the cylinder, the buckets carried thereby, and the casing surrounding the same, of an interposed seat attached to said casing and provided with the inclined forward edge, and set-screws for adjusting said seat, for the purpose set forth.

2. The combination, with the cylinder, the buckets carried thereby, and the casing thereof provided with the inlet and discharge orifices and with the sediment-grooves, of the false seat attached to said casing and having its forward edge located at or in close proximity to said grooves, substantially as shown and described.

3. The combination, with the casing having the inclined sediment-grooves and provided with the adjustable seat having its forward edge inclined to correspond with said grooves, of the cylinder and its buckets, all arranged substantially in the manner shown and described.

4. The combination, with a cylinder composed of sections provided on their adjacent faces with the recessed enlargements, as described, of the buckets L, connected to said cylinder by means of arms L' , located at points intermediate the ends of the cylinder, and provided with the trunnions L^2 , which enter and engage the recessed enlargements in adjacent sections, as described and shown.

5. The combination, with the screw-threaded shaft, of the cylinder composed of a number of sections, the screw-threaded confining collars or nuts located at opposite ends of said cylinder and inside the casing, and the buckets pivoted to said cylinder in the manner substantially as set forth.

6. The combination, with the shaft, of a cylinder composed of sections provided on their adjacent faces with recessed enlargements on the inside face of their rims for the reception of the piston-trunnions and with the curved slots for the passage of the piston-heads and the buckets pivoted thereto, substantially as described.

7. A cylinder-head for rotary pumps, composed of sections each having a central hub, a flat peripheral rim, and connecting-web, said sections being provided upon adjacent

faces inside said rims with recessed enlargements, in combination with the buckets pivoted thereto, substantially as set forth.

5 8. The combination, in a rotary pump, of the casing A, the head-plates B, having grooves *b b'*, the shaft C, the sectional cylinder D, the pistons connected therewith, and the jam-nuts or collars J and J', all arranged substantially as shown and described.

In testimony whereof I have hereunto set to my hand this 30th day of April, A. D. 1889.

CHARLES M. YOUNG.

Witnesses:

ALBERT TRUESDELL,
W. W. MASON.