

No. 730,715.

PATENTED JUNE 9, 1903.

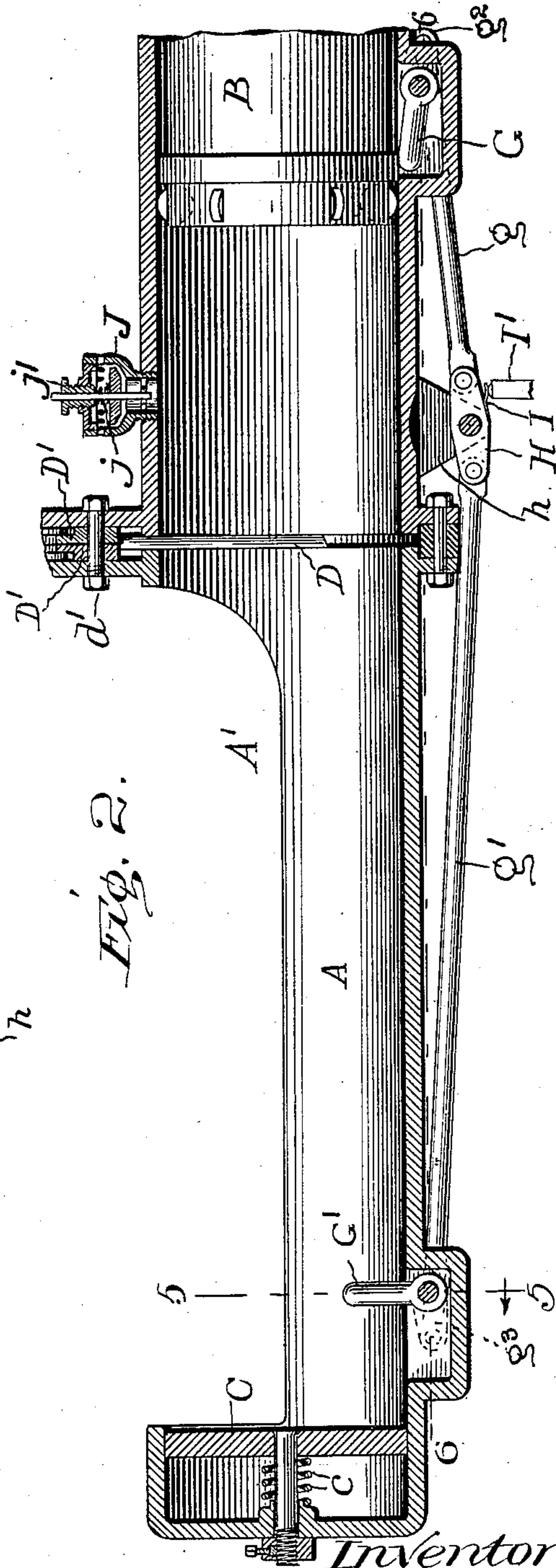
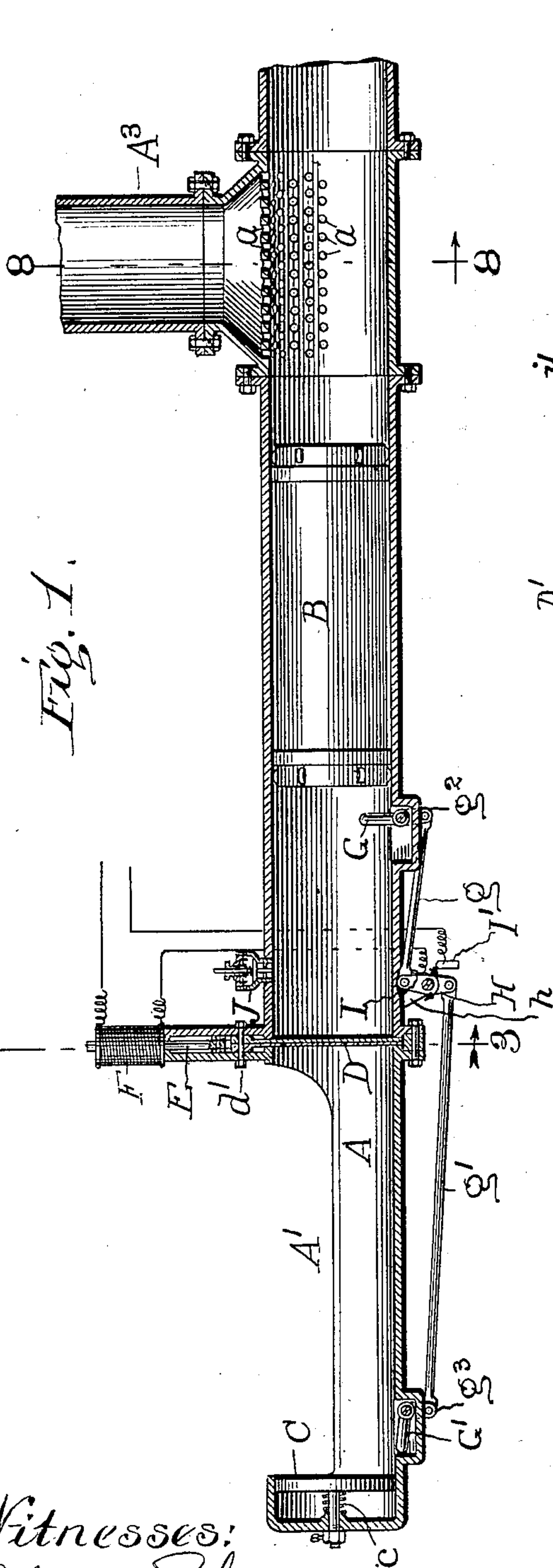
E. STEINBOCK.

TERMINAL FOR PNEUMATIC DESPATCH TUBES.

APPLICATION FILED JULY 3, 1902.

NO MODEL.

3 SHEETS—SHEET 1.



Witnesses:
Chas. C. Shewey
S. Bliss.

Inventor:
Ernest Steinbock
by H. T. Bitum.
Att'y.

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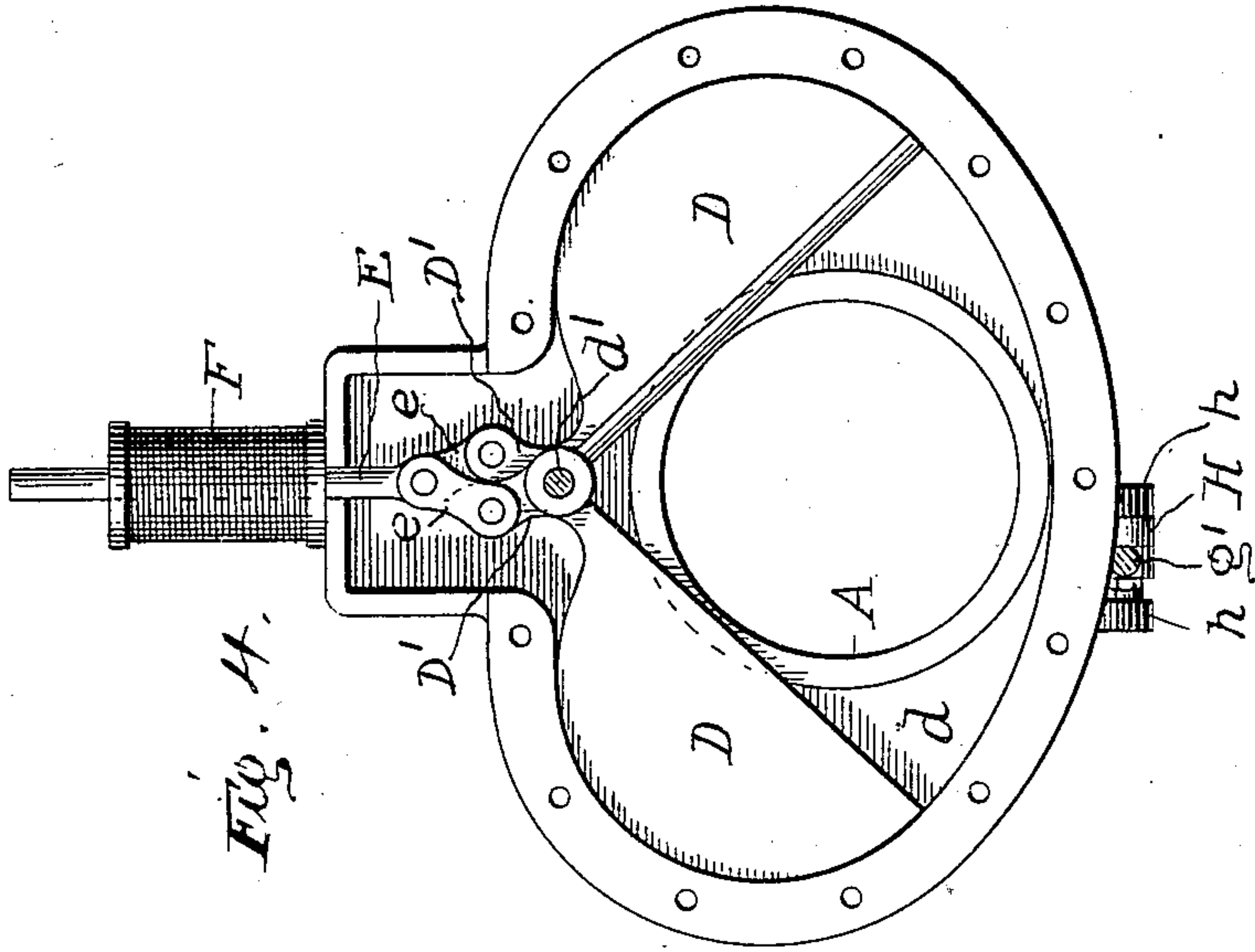


Fig. 4.

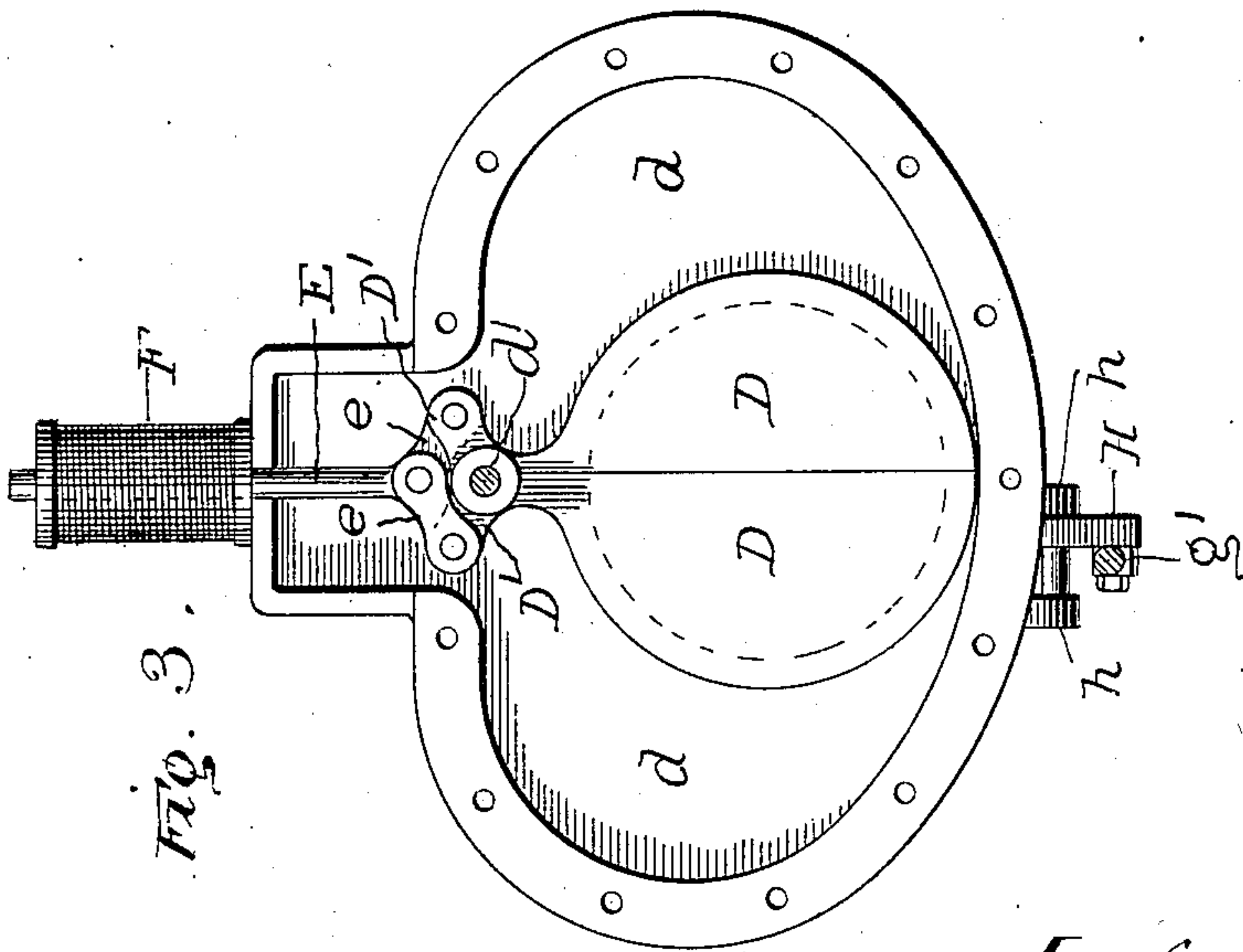


Fig. 3.

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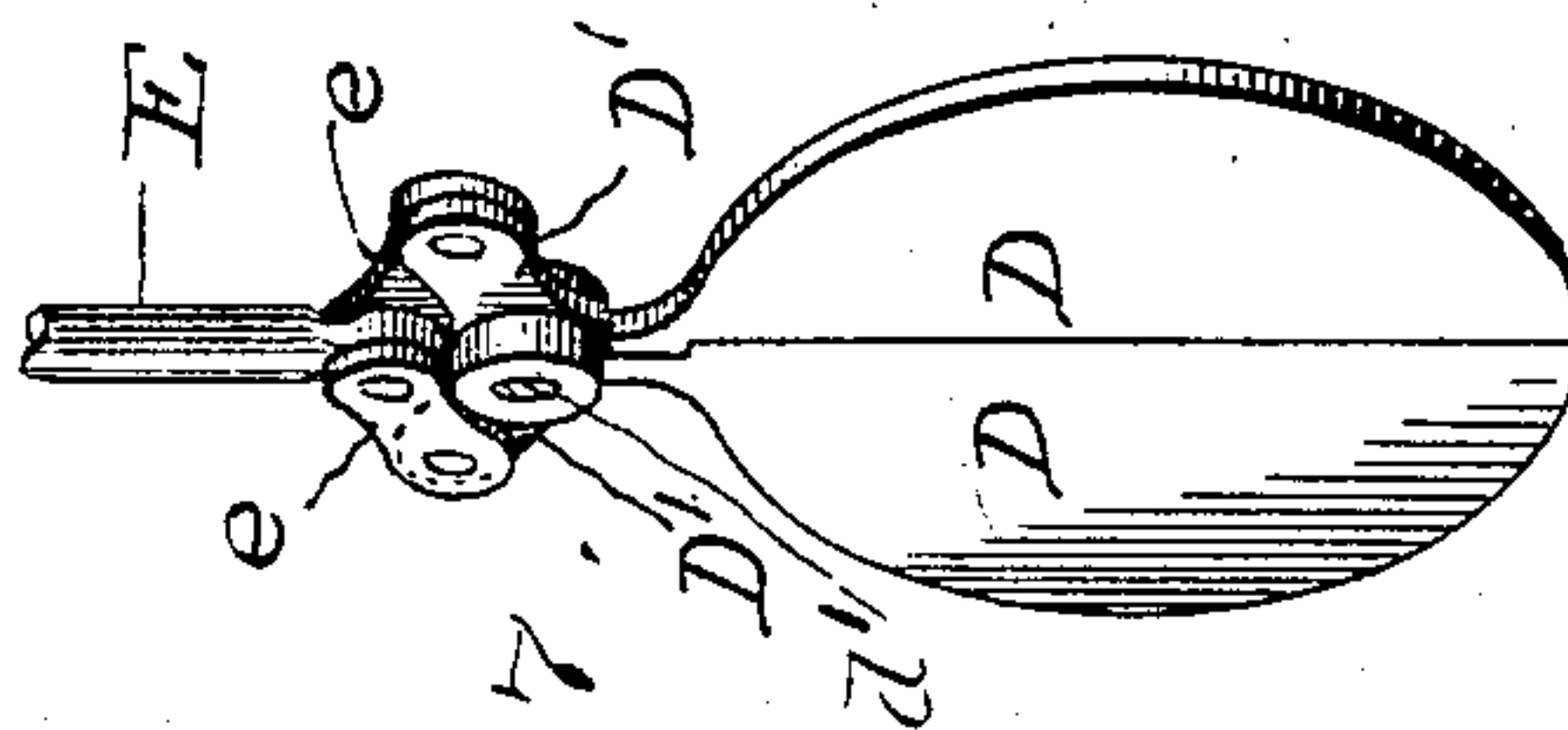
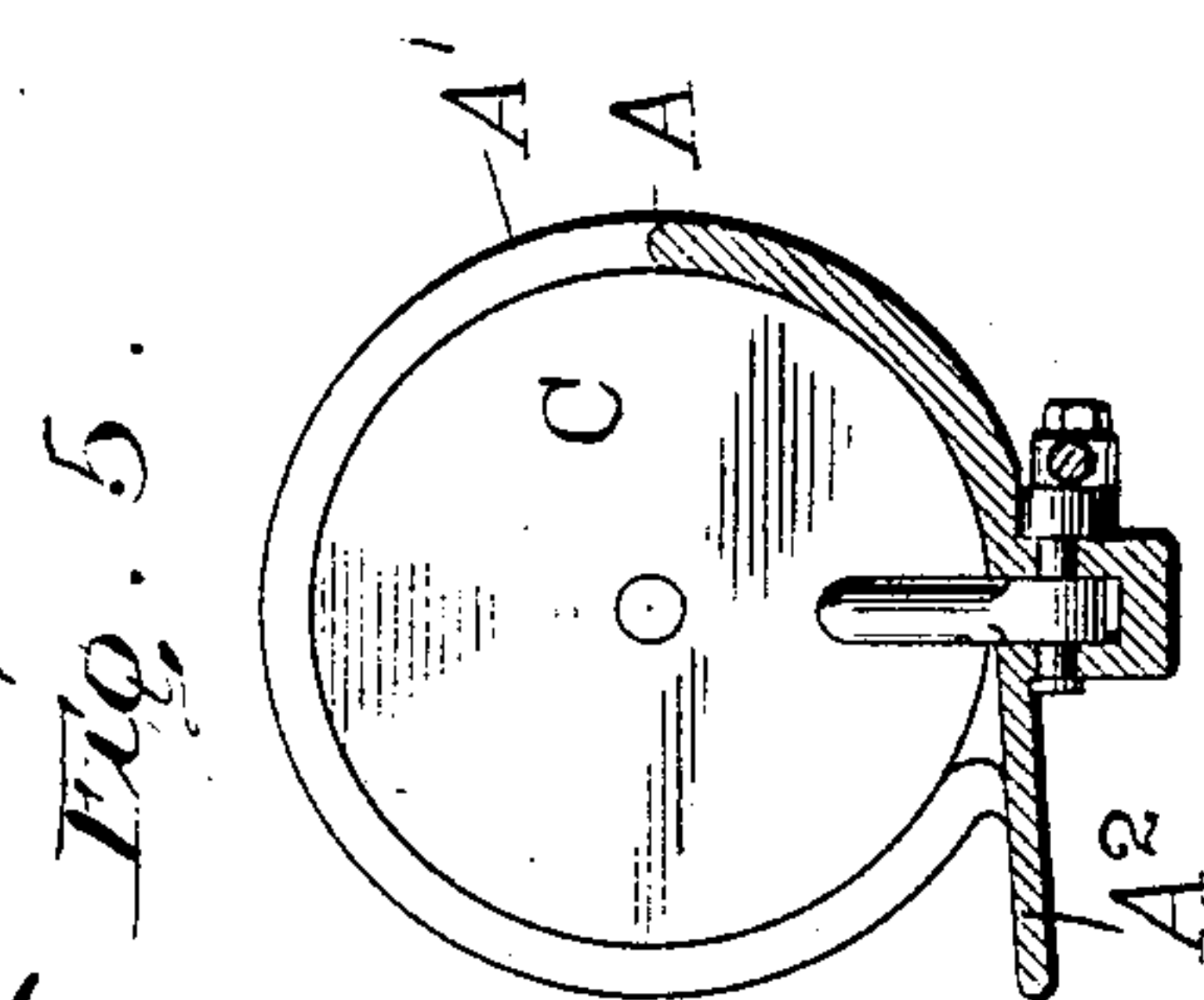
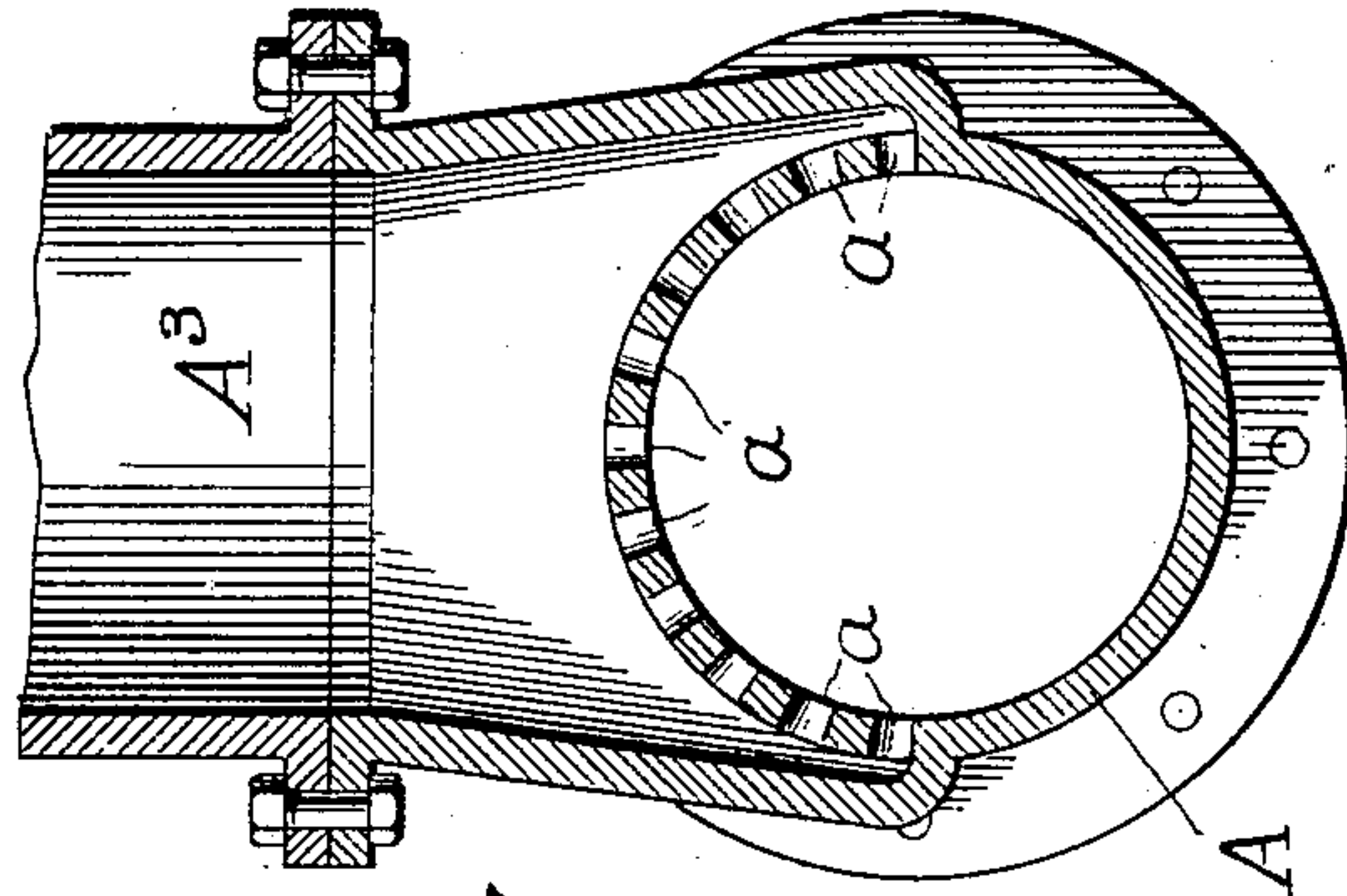
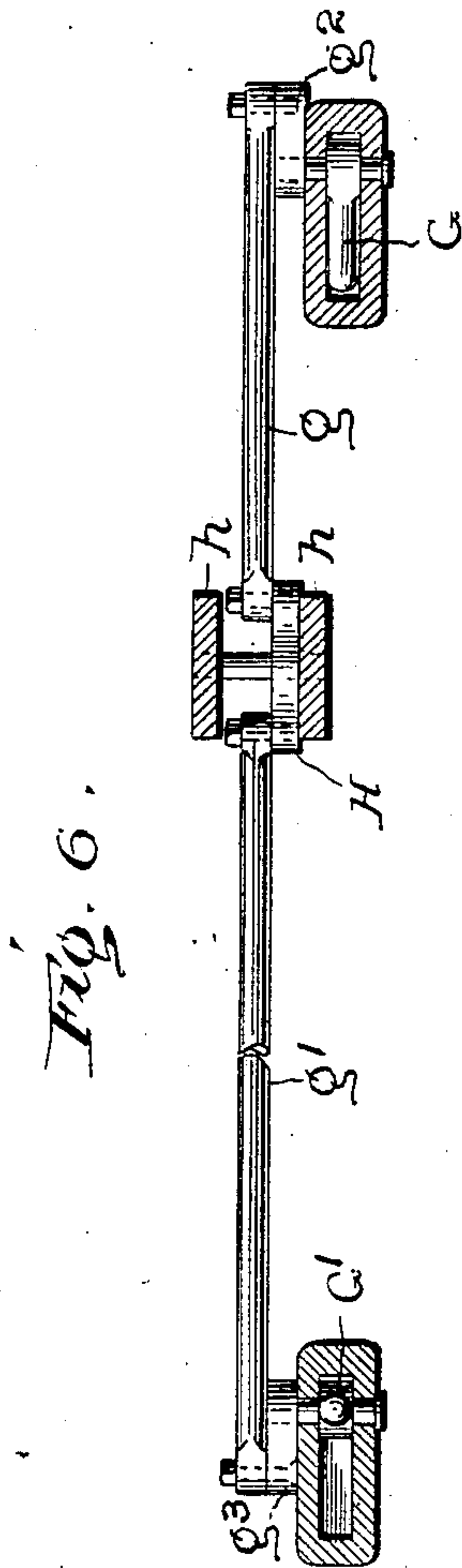
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TERMINAL FOR PNEUMATIC DESPATCH TUBES.

APPLICATION FILED JULY 3, 1902.

NO MODEL.

3 SHEETS—SHEET 3.



Witnesses:
Chas. C. Shovey
S. Bliss.

Inventor:
Ernest Steinbock
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UNITED STATES PATENT OFFICE.

ERNEST STEINBOCK, OF CHICAGO, ILLINOIS, ASSIGNOR TO NATIONAL PNEUMATIC SERVICE COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

TERMINAL FOR PNEUMATIC-DESPATCH TUBES.

SPECIFICATION forming part of Letters Patent No. 730,715, dated June 9, 1903.

Application filed July 3, 1902. Serial No. 114,194. (No model.)

To all whom it may concern:

Be it known that I, ERNEST STEINBOCK, a citizen of the United States of America, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Terminals for Pneumatic-Despatch Tubes, of which the following is a specification.

My invention relates to certain new and useful improvements in terminals for pneumatic-despatch tubes; and its object is to provide a device of this class for use preferably in connection with underground systems, wherein large tubes and large carriers are used. It is customary in underground systems to use compressed air for the purpose of propelling the carriers rather than to use a partial vacuum, which is preferable in connection with short lines and light carriers. For this reason my invention is illustrated as applied to the compressed-air system, although it could doubtless be varied to permit its application to suction systems.

The particular objects of my invention are to provide a simple terminal and one in which a heavy carrier can be brought quickly to rest without jolts or jars, which might tend to injure it and the terminals.

To these ends my invention consists in certain novel features of construction, which are clearly illustrated in the accompanying drawings and described in this specification.

In the drawings, Figure 1 is a central vertical longitudinal section through my improved terminal, showing the carrier in elevation. Fig. 2 is an enlarged view of the left-hand end of the same, the parts being in a different position. Fig. 3 is a section in the line 3 3 of Fig. 1. Fig. 4 is a similar section showing the parts in the position indicated in Fig. 2. Fig. 5 is a section in the line 5 5 of Fig. 2 looking in the direction of the arrow. Fig. 6 is a section in the line 6 6 of Fig. 2 looking downward. Fig. 7 is a perspective of the valve-plates and connections, and Fig. 8 is a section in the line 8 8 of Fig. 1 looking in the direction of the arrow.

Referring to the drawings, A is the despatch-tube, and it is cut away at A' to form an opening, from which the carriers are removed. The shape of this opening is clearly shown in Fig. 5, one side of the tube at this point extending up about half the height of the carrier and the other side of the tube being flattened out into an inclined plane A², upon which the carrier can be rolled out of the tube without lifting it. A number of perforations *a* are provided in the tube A at some distance from the end of said tube for the escape of air. These perforations open into a suitable flue A³, from which the escaping air is conducted to any desired point. It is the practice to pump compressed air into one end of the tube A and let it pass out through these perforations, driving the carrier before it through the length of the tube. A carrier B is shown in position in the drawings. It is of the ordinary type, provided with flanges which fit the tube and with suitable antifriction wheels or rollers, which permit it to run easily along. The end of the tube A is provided with a bumper C, backed up by a spring *c*, which bumper forms a cushion and prevents any undue jar on the carrier when it reaches the end of the tube.

Immediately in front of the opening A' in the tube A is provided a valve, the object of which is to close that portion of the tube between the perforations *a* and the hole A', so as to form an air-cushion to arrest the motion of the carrier B after passing the escape-perforations *a*. It is obvious, of course, that in such a system the valve must remain closed long enough to check the carrier, but shall instantly open when the carrier almost reaches it in order to permit the carrier to pass through. The construction of the valve and valve-operating mechanism will now be more particularly described. The plates forming the valves are indicated by D, and these plates are so constructed as to fit tightly together and close the tube A completely, forming an approximately air-tight joint. A laterally-projecting chamber *d* is provided in the

tube A, which permits these valve-plates D D to swing sidewise from the position shown in Fig. 3 to that shown in Fig. 4, thereby opening the tube A. The recess or chamber *d* is constructed in any desired way, the method herein shown consisting of projecting flanges formed upon two adjacent sections of the tube A and a ring interposed between these flanges. The plates D are pivoted upon a pivot *d'*, and each of them has an arm D' upon the opposite side of the pivot from the corresponding plate. These arms D' are connected at their extremities by two links *e e*, the opposite end of these links being connected to a rod E, extending vertically from the tube. It will be readily seen from the drawings that when the rod E is forcibly drawn upward the links *e* will draw the valve-plates D from the position shown in Fig. 3 to that shown in Fig. 4, thus opening the tube A. The rod E is surrounded at its upper end by a coil F, of wire, and forms therewith a solenoid. When an electrical current is passed through the coil F, the rod E, forming the core of the solenoid, is drawn upward and the valve is opened, as heretofore explained. The electrical current of the solenoid is controlled as follows: Two fingers G G' are pivoted in recesses in the bottom of the tube A, and these fingers are connected by suitable connecting-rods *g g'* and crank-arms *g² g³*, respectively, to a rocker-arm H, pivoted on suitable brackets *h*, secured to the bottom of the tube A. The connections between the fingers G G' and the connecting-rods *g g'* are such that either one of these fingers may project into the tube A, the other of said fingers at the same time lying down in the tube. Suitable contact-pieces I I', one of which is stationary and one of which is mounted upon the rocker-arm H, control the circuit of the solenoid.

The operation of the device will now be apparent. When the carrier B comes through the tube A and passes the perforations *a*, the valve-plates D are together and the valve is closed. The carrier B, retarded in its motion by the air-cushion thus formed, advances sufficiently to strike the finger G, although going at a greatly-reduced speed. When the carrier B strikes said finger, it pushes it down, draws the connecting-rod *g* to the right, and rotates the rocker-arm H in the direction of the arrow in Fig. 1, thereby closing the electrical current and actuating the solenoid. This, as heretofore explained, raises the valve-plates D D and permits the carrier B to pass through the tube and off into the opening A'. When the end of the tube A is reached, the finger G' is struck by the carrier B and the connecting-rod *g'* is moved to the right, the rocker-arm H is rotated in the opposite direction, and the electrical circuit is broken. This demagnetizes the solenoid, of course, and the valve-plates fall back by their own weight, closing the tube and providing a cushion for

the next carrier. A suitable escape-valve J is provided in the top of the tube A in front of the valve formed by the plates D, and the object of this valve is to permit the gradual escape of the air forming the air-cushion and to avoid undue strain upon the tube and valve. The construction of this valve is immaterial, except that it should be one of the many types wherein a means of adjustment is provided. In this case the adjustment is provided for by a spring *j* and set-screw *j'*.

I realize that considerable variations can be made in the details of this construction without materially departing from the spirit of the invention, and I do not, therefore, limit myself to the specific form herein set forth.

I claim as new and desire to secure by Letters Patent—

1. In a device of the class described, the combination with a pneumatic-despatch tube, and means in the end thereof for forming an air-cushion to arrest the motion of a carrier, of a valve adapted to permit the gradual escape of the air forming said air-cushion, and means for adjusting said valve, substantially as described.

2. In a device of the class described, the combination with a pneumatic-despatch tube and a valve adapted to close the end of the same, of a magnet adapted to operate said valve to open the same, and means whereby the approach of a carrier to said valve shall actuate said magnet, substantially as described.

3. In a device of the class described, the combination with a pneumatic-despatch tube, a valve adapted to close the end of the same, and means for opening said valve automatically on the approach of a carrier to said valve, of a magnet adapted to hold said valve open and means whereby the approach of a carrier to the end of the tube may demagnetize said magnet and permit said valve to close, substantially as described.

4. In a device of the class described, the combination with a pneumatic-despatch tube, of two valve-plates adapted when closed to close said despatch-tube, a rod suitably connected to said valve-plates and adapted by its longitudinal movement to separate said valve-plates, a coil of wire surrounding said rod and forming therewith a solenoid, means whereby the approach of a carrier to said valve will actuate said solenoid, and means whereby the approach of said carrier to the end of said tube will demagnetize said solenoid, substantially as described.

5. In a device of the class described, the combination with a pneumatic-despatch tube and a valve therein, of a rocker-arm pivoted below said tube, suitable electrical contacts on said rocker-arm, suitable electrical devices whereby said valve may be operated by the motion of said rocker-arm, and means

whereby the approach of a carrier to said
valve shall operate said rocker-arm to open
said valve, and means whereby the approach
of a carrier to the end of said tube shall op-
5 erate said rocker-arm to close said valve, sub-
stantially as described.

In witness whereof I have hereunto set my

hand at Chicago, in the county of Cook and
State of Illinois, this 21st day of June, A. D.
1902.

ERNEST STEINBOCK.

Witnesses:

WILLIAM L. CHURCHILL,
CHAS. O. SHERVEY.