

No. 781,507.

PATENTED JAN. 31, 1905.

P. EVANS.
STRAINER.

APPLICATION FILED JUNE 4, 1904.

3 SHEETS—SHEET 1.

Fig. 1.

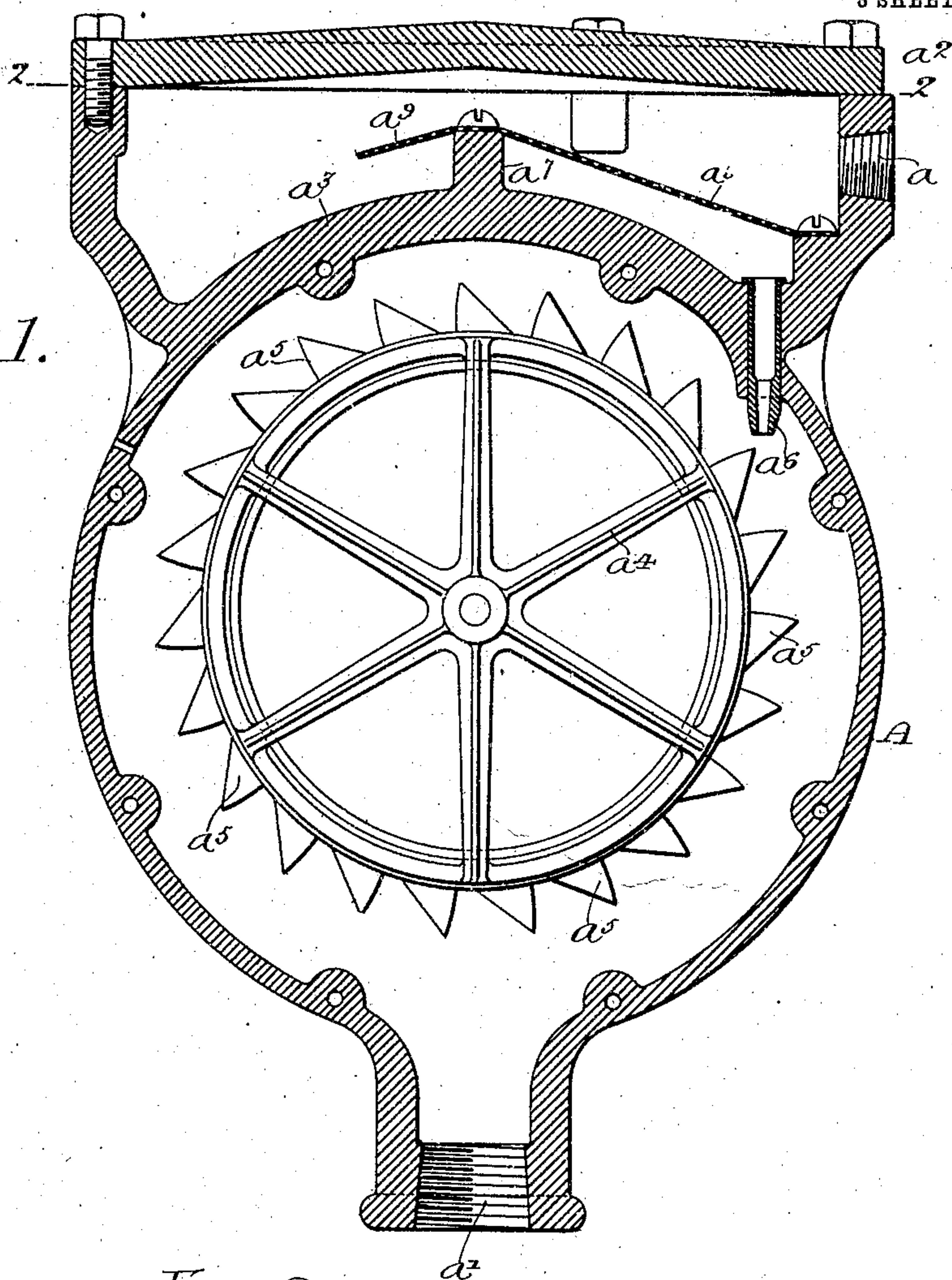
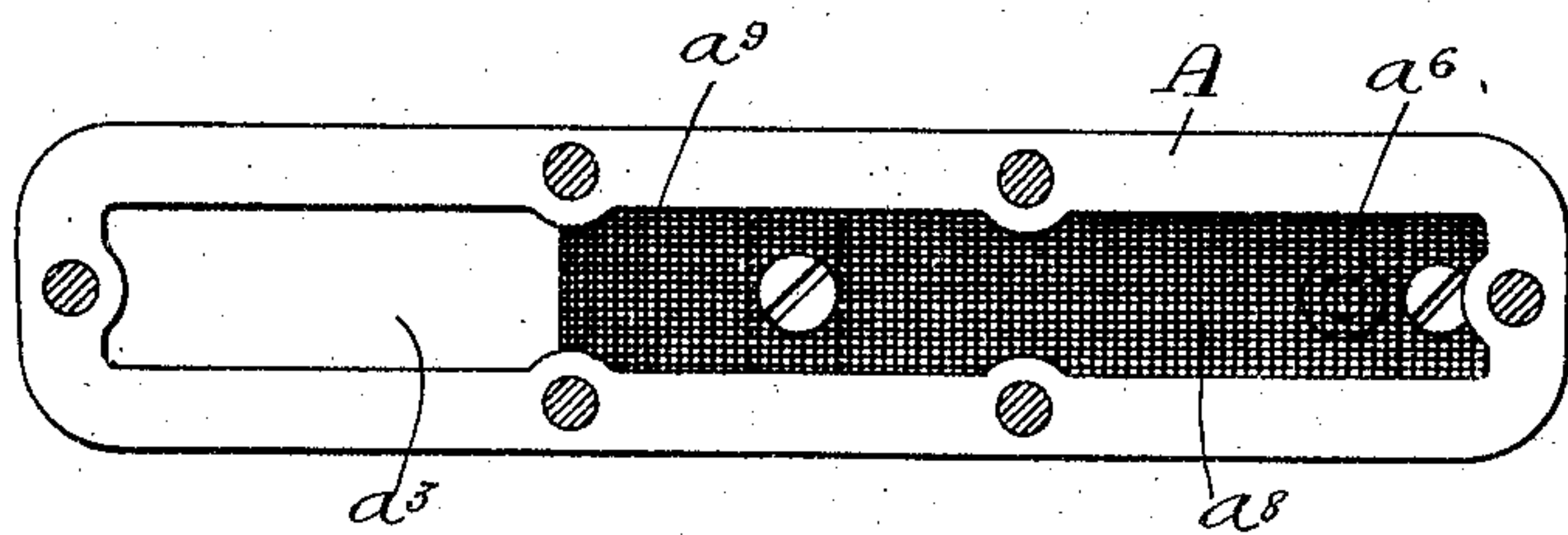


Fig. 2.



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3 SHEETS—SHEET 2.

Fig. 3.

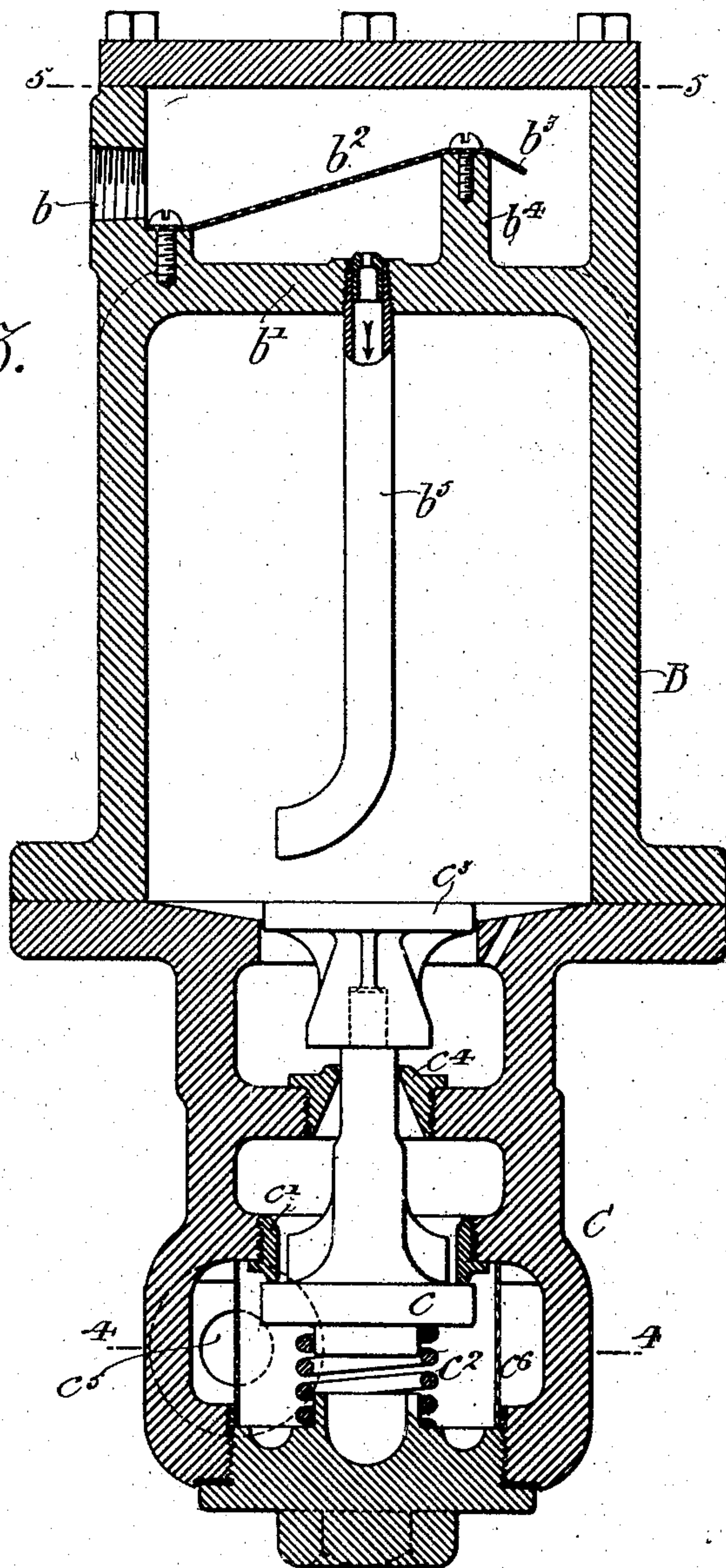
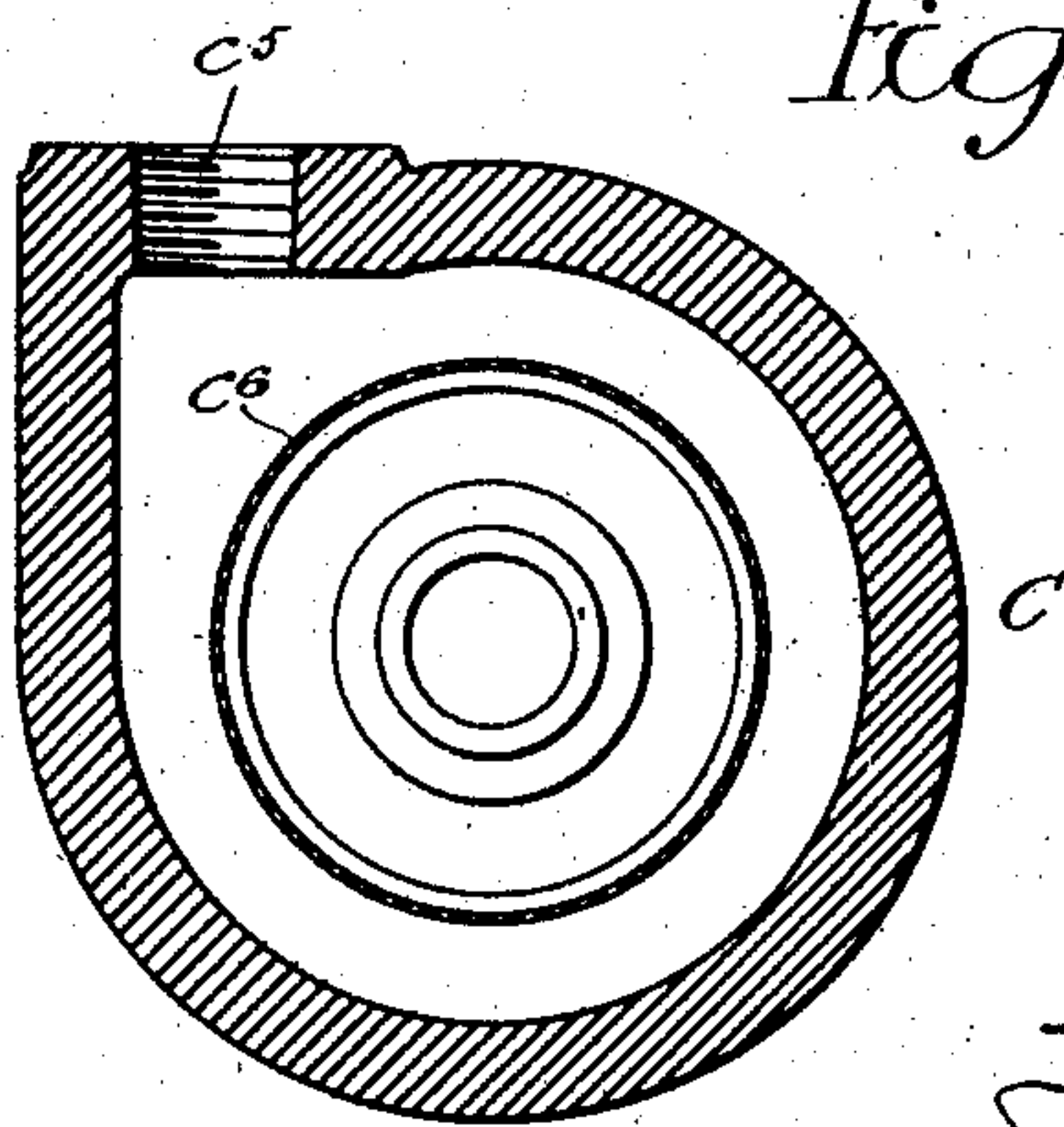


Fig. 4.



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3 SHEETS—SHEET 3.

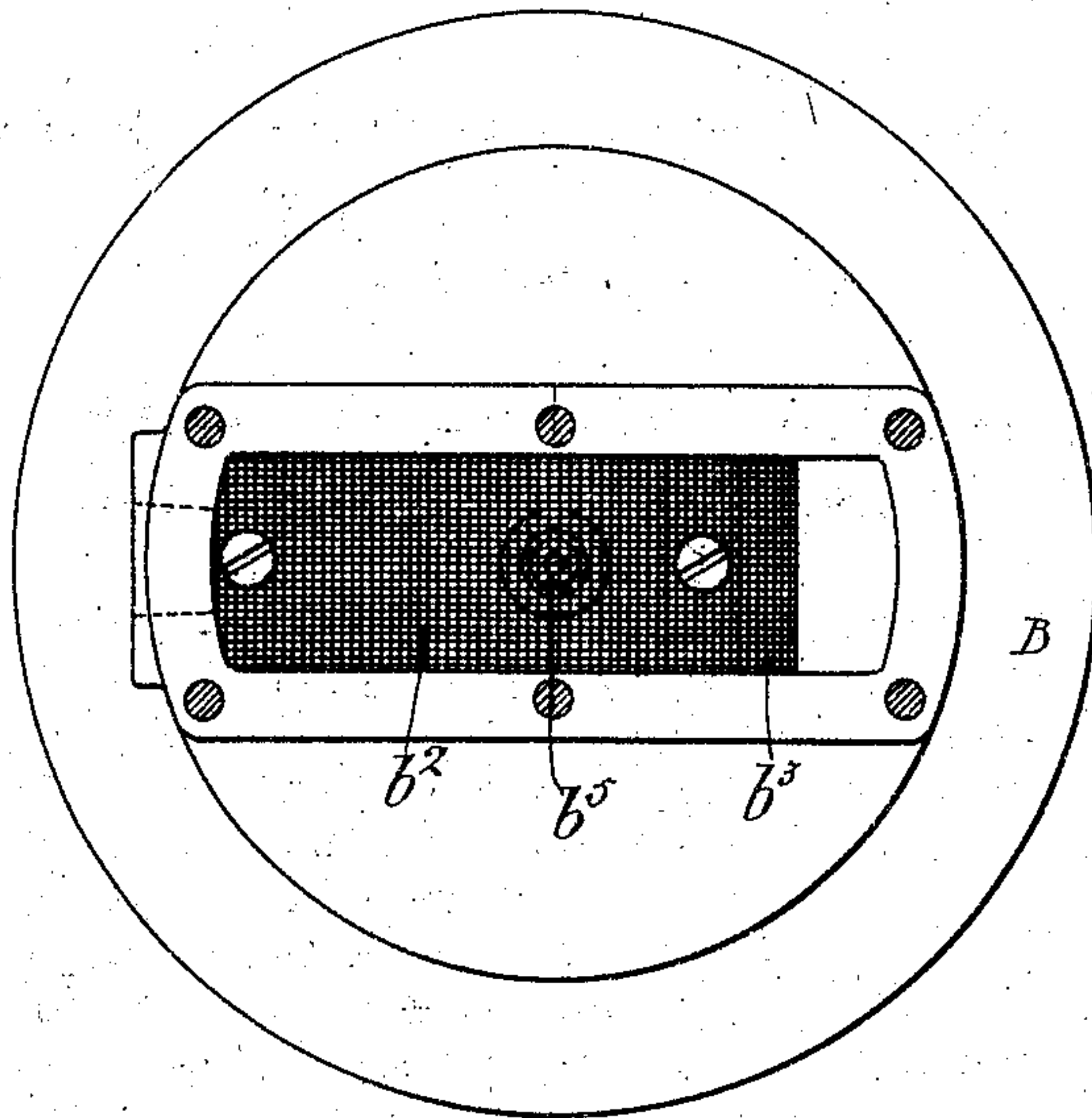


Fig. 5.

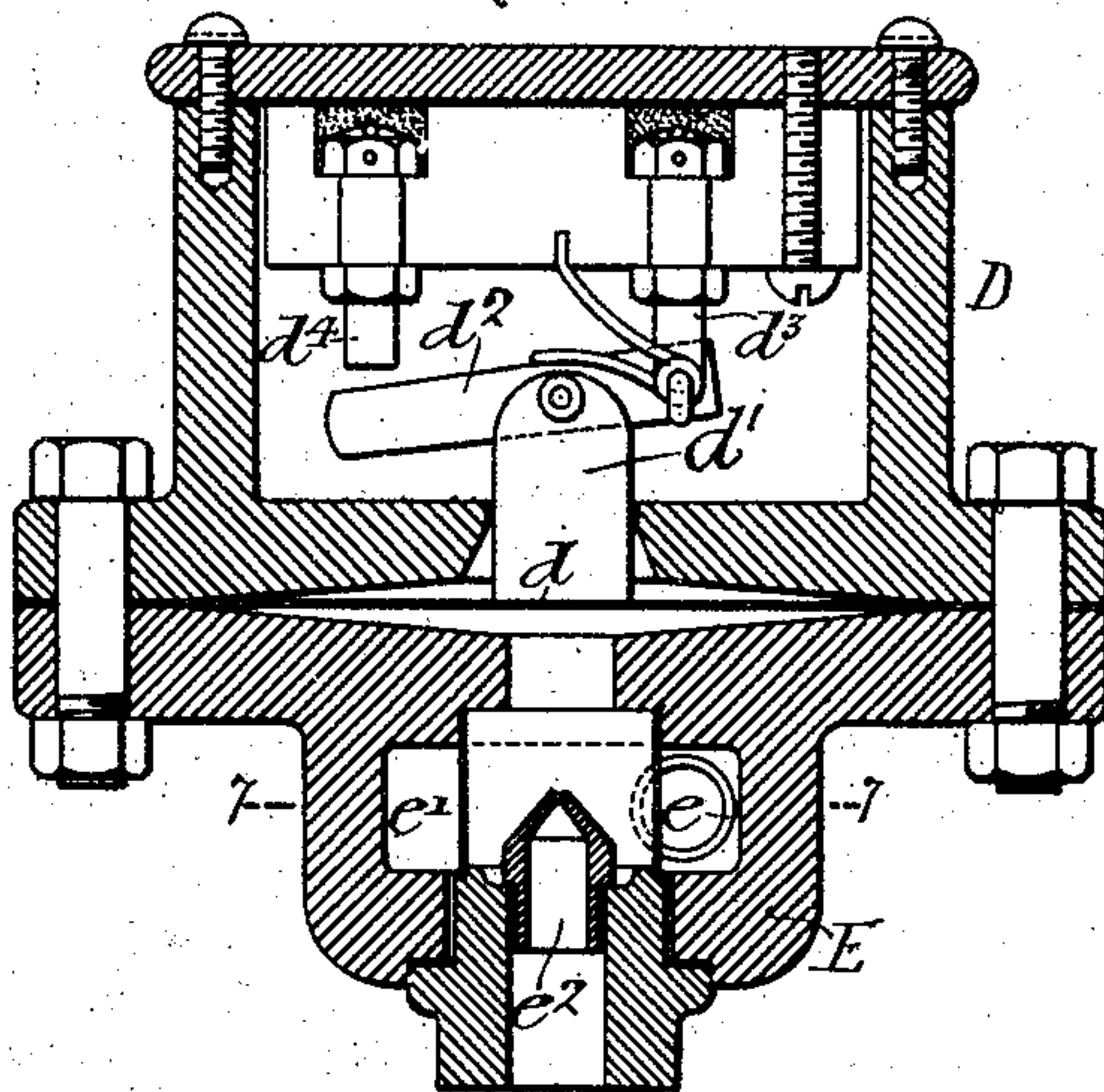


Fig. 6.

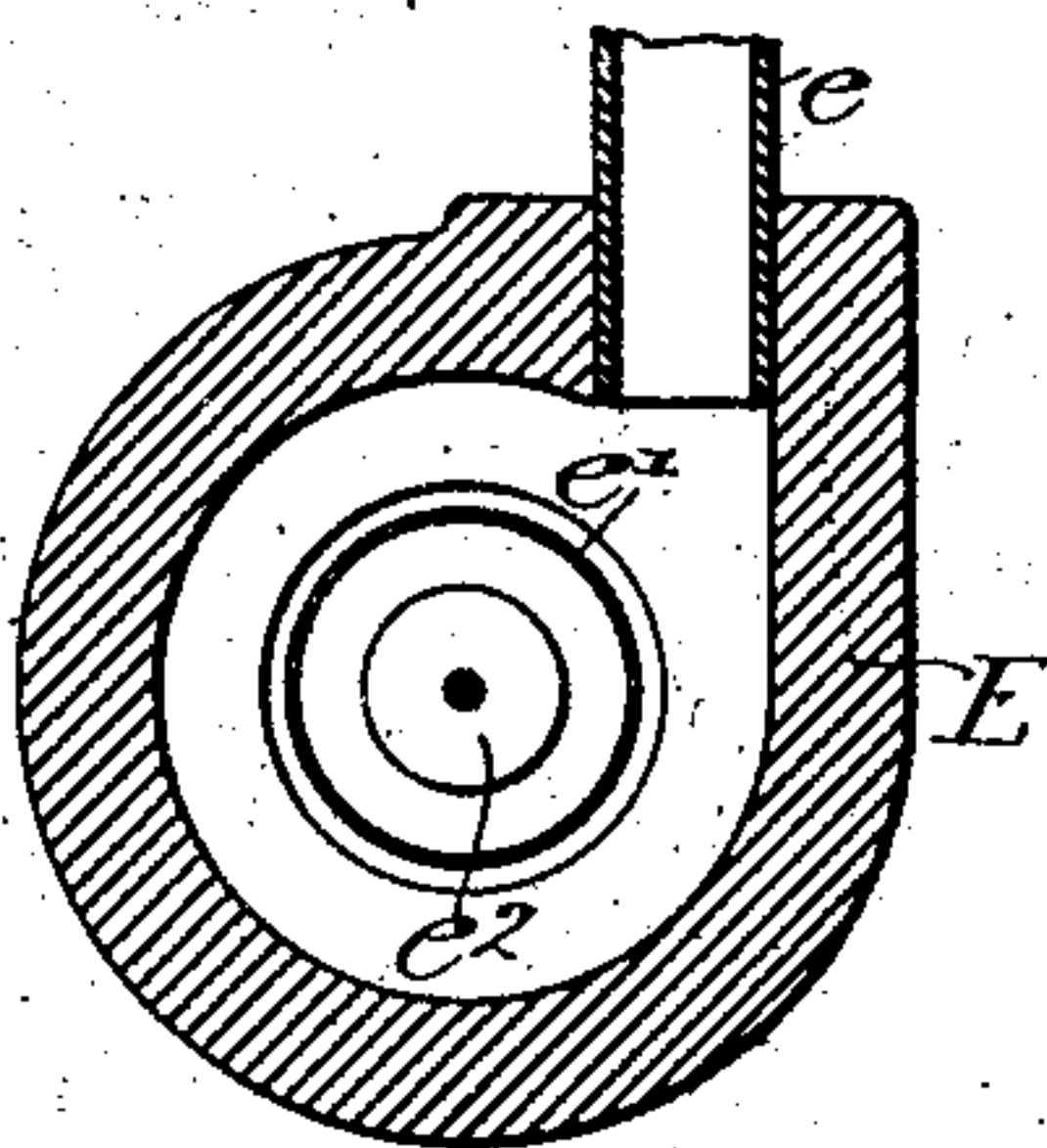


Fig. 7.

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UNITED STATES PATENT OFFICE.

POWELL EVANS, OF PHILADELPHIA, PENNSYLVANIA.

STRAINER.

SPECIFICATION forming part of Letters Patent No. 781,507, dated January 31, 1905.

Application filed June 4, 1904. Serial No. 211,201.

To all whom it may concern:

Be it known that I, POWELL EVANS, a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented certain Improvements in Strainers, of which the following is a specification.

My invention relates particularly to an improved strainer attachment for use in connection with fluid-actuated apparatus—such, for example, as automatically-acting alarm mechanism employed in connection with sprinkler or other fire-extinguishing systems.

One object of the invention is to provide an attachment of the character noted which shall be of such a nature as to prevent possible clogging of the apparatus, thereby increasing the certainty of its action.

It is further desired to provide a strainer attachment which while being so constructed as to render impossible the lodging of particles of solid material upon its surface shall provide means for trapping such particles and preventing their continued circulation within the portion of the device into which fluid is first admitted.

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

Figure 1 is a sectional elevation of a water-motor of the type employed in connection with alarms for fire-extinguishing systems, said motor being provided with my improved strainer attachment. Fig. 2 is a sectional plan view taken on the line 2 2, Fig. 1. Fig. 3 is a sectional elevation of a flow-retarding device employed in connection with alarm mechanism for fire-extinguishing systems, showing two forms of my invention as applied thereto. Figs. 4 and 5 are respectively plan views taken on the lines 4 4 and 5 5 of Fig. 3. Fig. 6 is a sectional elevation of a well-known form of circuit-closer also employed in connection with fire-extinguishing systems and having my improved strainer attachment applied to it; and Fig. 7 is a sectional plan view on the line 7 7, Fig. 6.

It will be understood that in the design and construction of apparatus for use in connection with fire-extinguishing systems it is of the most vital importance that the various

pieces of apparatus employed shall be ready for operation at all times and shall moreover be of such nature as to remain in operative condition even after the lapse of many years.

In almost every case the safety of lives and valuable property is made to depend on the instantaneous operation of apparatus which may have been idle for an indefinite period often without test or inspection, and while the utmost care is ordinarily taken to prevent the corrosion of parts in engagement or the clogging of any part it is the object of my invention to still further reduce the possibility of failure of fire-extinguishing apparatus even though it be supplied with water carrying solid particles. It is with the idea of increasing the certainty of operation of this particular class of apparatus that I have devised my improved strainer attachment, and it will be understood that said attachment is not limited in its use to fire-extinguishing apparatus, as it is conceivable that it could be used with great advantage in connection with other devices operated by or conducting bodies of liquid.

Referring to Figs. 1 and 2, A is a casing having an inlet a , an outlet a' , and a cap or cover a'' , removably bolted in position. Within said casing is a partition a^3 , dividing it into two chambers, within one of which is rotatably supported the movable element a^4 of a water-motor, whose detail construction, not being part of the present invention, will not be described. It may be stated, however, that said element a^4 is provided with a number of peripheral vanes or buckets a^5 , and there is extending through the partition a^3 a nozzle a^6 , through which fluid passes from one chamber of the casing A to the other and by which said fluid is directed against said vanes. There is in the present instance a projecting rib a^7 upon the partition a^3 and a screen or strainer a^8 extending from the side of the upper chamber of the casing adjacent to the opening a to the top of said rib, there being a portion a^9 of said strainer projecting beyond or overhanging the rib. This strainer extends, as shown in Fig. 2, completely across the casing, so that liquid entering the opening a is compelled to pass through it before it can enter the nozzle a^6 . It will

be further noted that the main portion of the strainer is inclined at a relatively small angle to the line of the opening a , so that liquid entering said opening will strike the screen and continually wash therefrom any particles of solid matter carried by the fluid which might lodge thereupon. The current of fluid entering the opening a would tend to carry such particles of solid matter off the screen into the relatively large space beyond its end, and said end, which overhangs, as noted, effectually prevents the return of the solid matter to that portion of the screen through which fluid passes to the nozzle a^6 . The part a^9 therefore acts as a trap for the retention of solid bodies in the recess or depression beyond the screen, and, moreover, owing to the fact that said overhanging portion is perforated, the circulating liquid in the casing is permitted to freely pass without carrying with it such pieces of solid material, as might be the case if the overhanging casing were imperforate. Moreover, the expense of constructing the device is reduced to the minimum by the use of this perforated overhanging structure, since the device is most easily made and put together when the strainer and overhanging portion are formed in one piece.

In the upper portion of the retarding device shown in Fig. 3 and also illustrated in Fig. 5 is seen a similar application of my invention. This device consists of two casings B and C, held together in any desired manner, of which the larger is provided with an inlet b , and, as in the case of the device shown in Fig. 1, there is a partition b' separating the main casing into two parts, in the upper of which is a screen b^2 , inclined to the line of the inlet b . This screen has a portion b^3 projecting over the recess formed by an upwardly-projecting rib or lug b^4 , upon which the overhanging end of said screen is supported. As in the case first described and as shown in detail in Fig. 3, there is an opening through the partition in which is fixed a tube b^5 , leading from the space under the screen b^2 into the interior of the casing B. Without describing in detail the construction of the casing C, which forms no part of the present invention, it may be stated that this has within it a valve c , normally held to a seat c' by means of a spring c^2 . This valve is provided in the present case with an upwardly-projecting stem, as shown, upon which is carried a head c^3 , having a portion formed to coact with a second valve-seat c^4 , so that when from any cause the valve is moved downwardly for a sufficient distance the said head c^3 will rest upon said seat. The casing C is formed so that there is a space or chamber below the valve c having an opening c^5 , whose line is tangent to a circle drawn from the center line of the valve. Within the said chamber is a cylindrical screen c^6 , whose surface includes

the circle to which the line of the opening c^5 is tangent.

In Figs. 6 and 7 the same device is shown as applied to a circuit-closer used to actuate an electric alarm when certain fluid-actuated apparatus employed in connection with a fire-extinguishing system is operated. This device consists of two casings D and E, connected together and having between them a diaphragm d , with which engages a plunger d' , equipped with a switch-blade d^2 , so placed that under certain conditions of the diaphragm said blade is made to complete an electric circuit between terminals d^3 and d^4 . Entering the hollow interior of the casing E is a pipe e , the line of which, as in the case of the structure shown in Figs. 3 and 4, is substantially tangent to the surface of a cylindrical screen e' . The interior of this screen communicates with the under side of the diaphragm d and also has opening into it a nozzle e^2 , having a relatively small opening for the outflow of liquid.

In the two latter cases above described liquid flowing through the openings e^5 and e will strike the cylindrical surface of the screens at an angle, so as to effectually remove therefrom, as well as prevent the lodgment of, particles of solid matter, although it will be noted that in said two cases there is no chamber, as in the first two cases described, for the settlement of any pieces of solid material. It will be noted, however, in Fig. 6 that the inlet to the nozzle e^2 is an appreciable distance above the bottom of the space into which the pipe e opens, so that the natural tendency of pieces of solid material after they have been dislodged from the screen e' by the incoming liquid is to settle in the lower part of said space.

I claim as my invention—

1. The combination of a casing, a strainer dividing the same into chambers, of which one has an inlet and the other an outlet, the part of the chamber having the inlet being provided with an overhanging structure extending beyond the strainer and forming a trap, substantially as described.

2. The combination of a casing having within it a rib, a strainer extending to said rib and dividing the casing into chambers, of which one is provided with an inlet and the other with an outlet, there being a strainer projecting beyond the rib and overhanging within a portion of the inlet-chamber so as to form a trap, substantially as described.

3. The combination of a casing having within it an upwardly-extending rib, a strainer dividing the casing into two chambers, said strainer resting upon and extending beyond the top of the rib, there being an inlet to one of the chambers and an outlet to the other, substantially as described.

4. The combination of a casing having with-

in it an upwardly-extending rib, and a strainer extending from said rib toward a side of the casing, there being an inlet entering the casing in a line to direct liquid upon the strainer and at an acute angle thereto, said casing also having an outlet, substantially as described.

5 5. The combination of a casing having within it a transverse rib, and a strainer extending from a point adjacent to one side of the casing to the rib and overhanging the same, there being an outlet to the casing from the space under the strainer and an inlet to said casing placed to direct liquid upon the strainer at an acute angle thereto, substantially as described.

15 6. The combination of a casing having across it a partition provided with an opening, a strainer in one of the chambers formed by said partition, the same dividing said chamber into two compartments, in one of which enters the opening in the partition, there being an inlet in the other compartment placed

to direct liquid upon the screen at an acute angle thereto, with a structure forming substantially a continuation of the strainer-surface and relatively distant from the inlet, substantially as described.

7. A casing having an inlet and an outlet and a strainer interposed between said inlet and outlet, with a trap beyond one end of said strainer formed by a structure in continuation of the strainer-surface and placed to keep and retain pieces of solid material failing to pass through said strainer and falling beyond the same, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

POWELL EVANS.

Witnesses:

J. C. BIGGERSTAFF,
WALTER W. LAMPSON.