

No. 661,373.

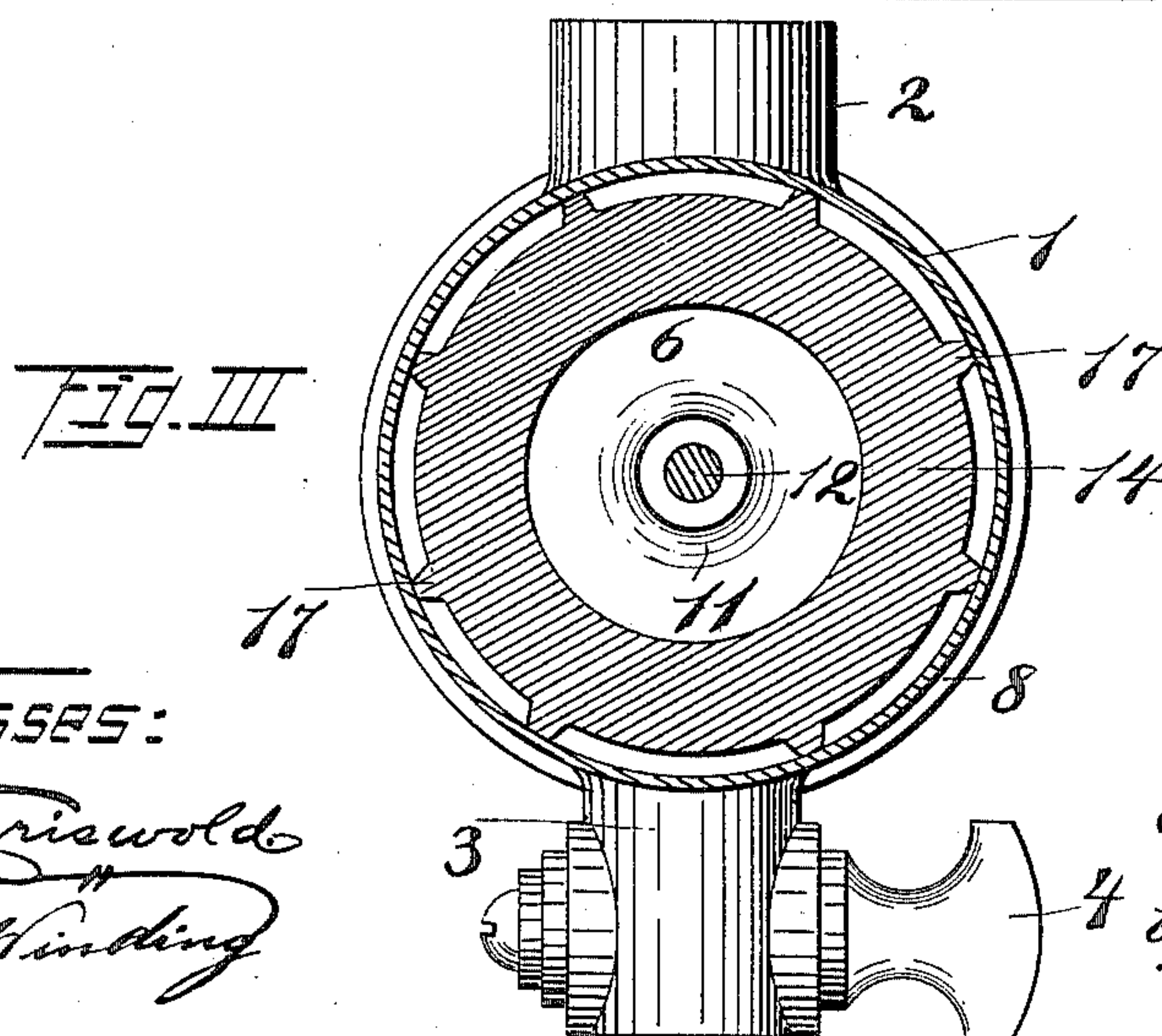
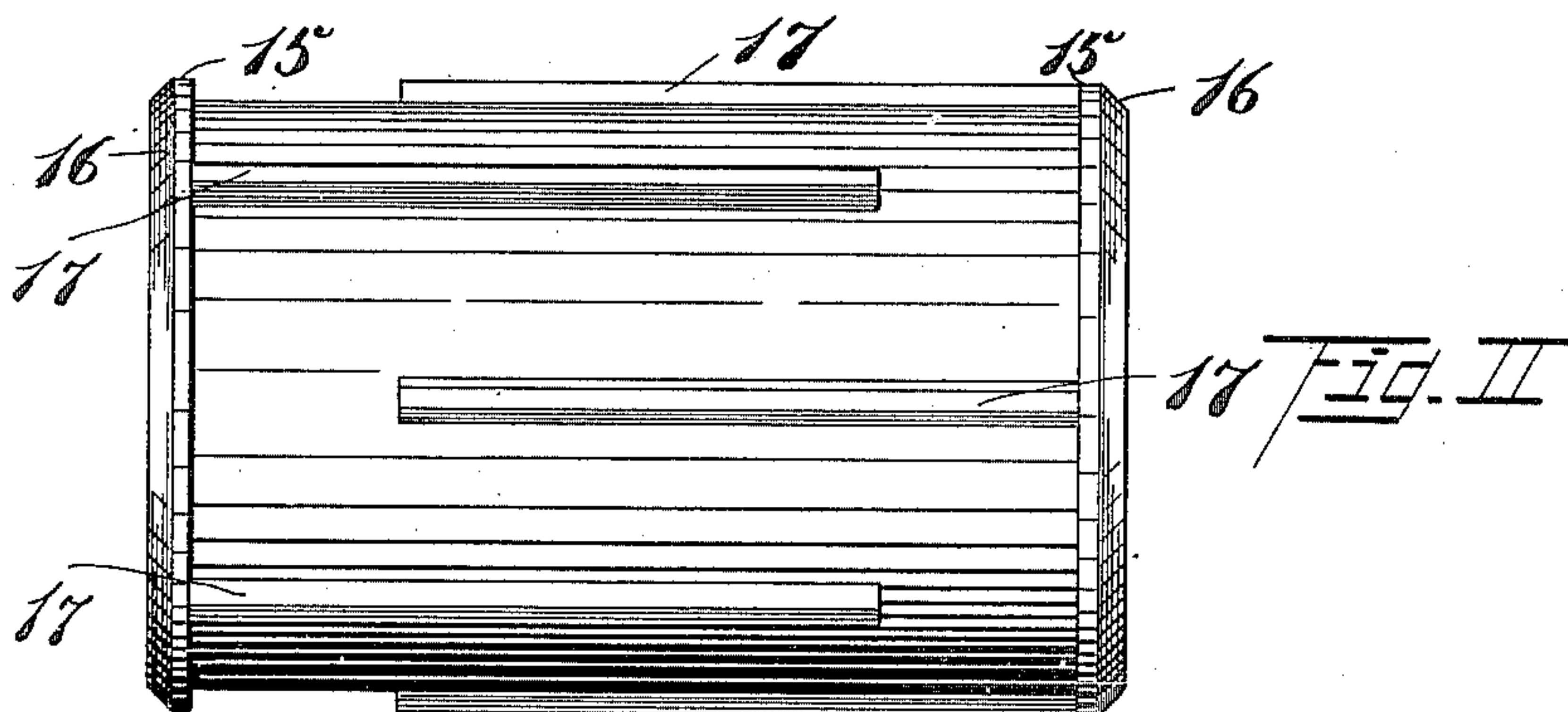
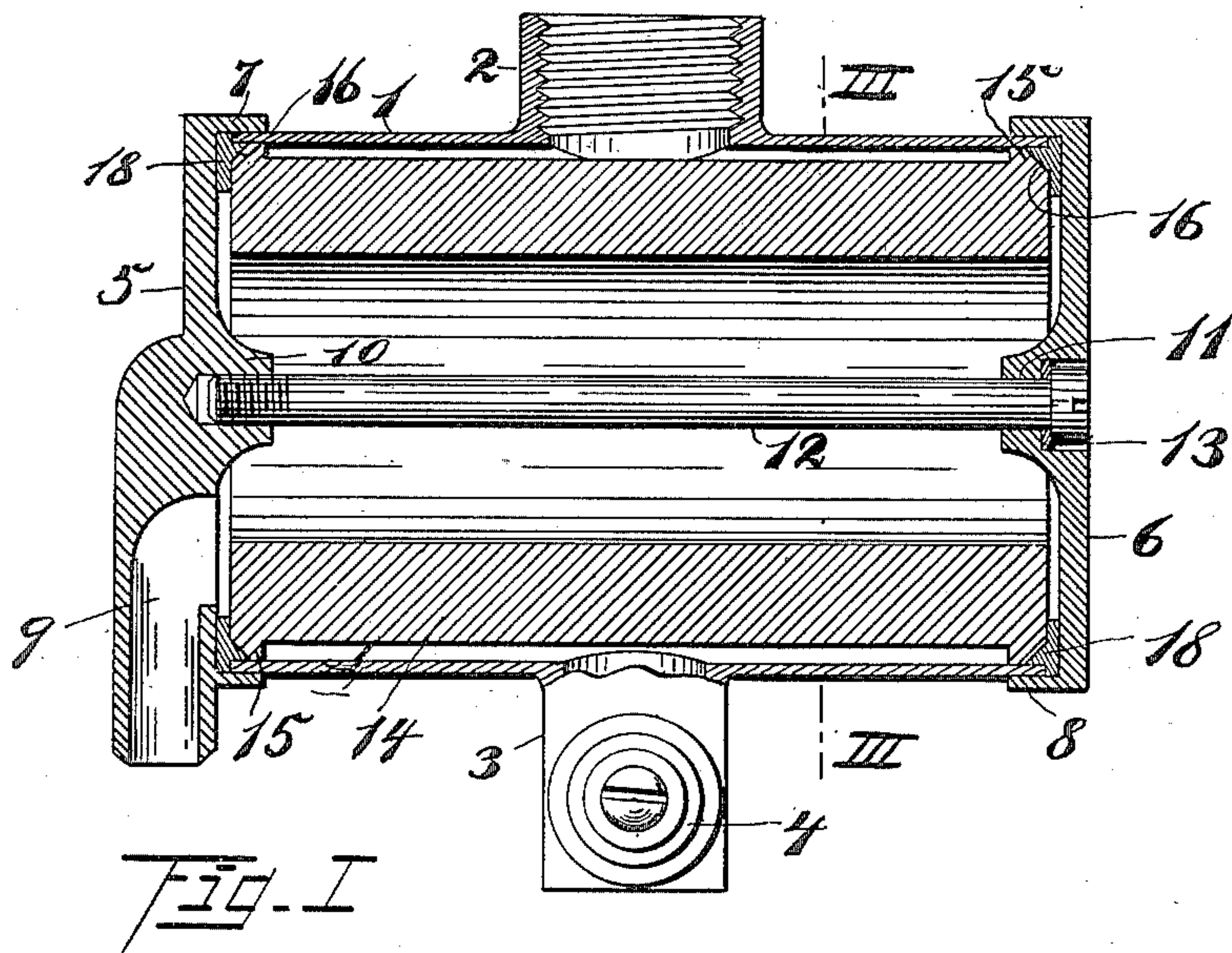
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W. JANDUS.

FILTER.

(Application filed Apr. 22, 1899. Renewed Sept. 29, 1900.)

(No Model.)



Witnesses:

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UNITED STATES PATENT OFFICE

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FILTER.

SPECIFICATION forming part of Letters Patent No. 661,373, dated November 6, 1900.

Application filed April 22, 1899. Renewed September 29, 1900. Serial No. 31,533. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM JANDUS, a citizen of the United States, and a resident of Cleveland, county of Cuyahoga, and State of Ohio, have invented certain new and useful Improvements in Filters, of which the following is a specification, the principle of the invention being herein explained and the best mode in which I have contemplated applying that principle, so as to distinguish it from other inventions.

The annexed drawings and the following description set forth in detail one mechanical form embodying the invention, such detail construction being but one of various mechanical forms in which the principle of the invention may be used.

In said annexed drawings, Figure I represents an axial section of my improved filter; Fig. II, a side view of the filtering-body, and Fig. III a transverse section on the line III III in Fig. I.

The filter has a cylindrical casing 1, at one side of which an inlet-nipple 2 is provided, which nipple is adapted—in this case by means of an internal screw-thread—to be attached to a bib-cock or other outlet for water. An outlet-nipple 3 is provided upon the casing and has a suitable controlling cock or valve, in the present case an ordinary plug 4. Two flanged heads 5 and 6 fit with their peripheral flanges 7 and 8 over the ends of the casing. One, 5, of said heads has an outlet-channel 9 formed in it for the outlet of filtered water. A lug 10 is formed upon the center of the inner face of said head, and said lug has a screw-threaded bore. The other head has a central hole 11, through which a stay-bolt 12 passes, the threaded end of which bolt enters the bore in the opposed head and the head of which bolt bears against a washer 13, placed in a recess in the outside of the head. The two heads are thus drawn together against the ends of the casing by means of the stay-bolt. The filtering-body 14 is cylindrical and is formed with annular shoulders 15 at its ends, which shoulders are as nearly as possible of the same diameter as the inside diameter of the casing. The ends of the filtering-body are beveled at their edges at 16. The cylindrical filtering-body is tubular, and the outer side of the body is formed

with ribs 17 or partitions of the same height as the end shoulders and alternately projecting from said shoulders at the opposite ends, so that a tortuous channel is formed around the filtering-body between the latter and the casing. Annular gaskets 18 are clamped between the ends of the filtering-body and of the cylinder and the heads to form tight packings in the annular grooves formed at said points by the bevels of the filtering-body. The gaskets are originally half-round in cross-section or of similar cross-section and have their thinner edges clamped by the ends of the filtering-body and of the cylindrical casing against the heads, and their bulged middles fill the spaces formed by the bevels of the filtering-body. In this manner a very slight surface only is exposed to the water-pressure at the end joints of the filter—namely, only so much of the gasket as may be exposed between the outside of the shoulder and the inner side of the casing, which will be a very slight surface if the shoulder has a fairly good fit within the cylindrical casing.

The tortuous channel around the filtering-body may be formed by partitions separate from the body. As the channel is formed by partitions alternately projecting from opposite ends and the straight portions of its passages are consequently longitudinal to the cylindrical filtering-body, the water entering through the inlet will pass to both sides of the filtering-body forward and back over the surface of the same. This will cause two streams of water to pass in opposite directions, one on each side of the filtering-body, exposing both sides of said body to the same pressure and causing the opposed streams to be forced through the porous body. When the unfiltered-water outlet is opened, the two opposed streams will unite and flow out through the same. Proportional great capacity, with the advantage of the retardation of the water by the tortuous channel, will thus be attained. The entire surface of the filtering-body will be in action filtering the water, and said surface is still more increased when the partitions are formed integral with the filtering-body. The resistance offered to the passage of the water through the tortuous channel at both sides of the filtering-body

from the inlet causes the water to be forced through the body and causes the cleansing action of the water to be more thorough when the waste-outlet is opened than it would be if the chamber between the casing and the filtering-body were open and unobstructed or if the passage for the water passed in one direction only. In the cylindrical filters with which I am acquainted the heads of the casing are subjected to great pressure, and the joints between the ends of the cylindrical sides and the heads are liable to be greatly strained, and thereby become leaky, as the full water-pressure bears against the entire surface of the heads. By providing the offsets or shoulders at the joints between the ends of the filtering-body and of the casing and packing the small space between said shouldered ends the narrow edge of such packing is the only portion exposed to the strain, and the heads are entirely relieved from strain, as nothing but the hardly-appreciable pressure of the filtered water bears against the heads.

I contemplate the use of porous carbon or other composition capable of being molded and hardened for the filtering-body; but the body may be made from natural stone or other natural substance cut or otherwise shaped into the desired form.

When the filter is attached to an ordinary water-faucet or bib-cock and the water is turned on, the water will pass around the filtering-body on both sides of the same through the tortuous channel and will be forced through the filtering-body into the central chamber in the latter, from which chamber it will run out at the filtered-water outlet. When it is desired to draw unfiltered water or to cleanse the filter from impurities collected upon the surface of the filtering-body, the waste-cock is opened and the water will pass through the tortuous channel, scouring off the impurities by its friction against the surface of the body and carrying them off through the waste-outlet. Considerable friction will be created by the passage of the water through the narrow tortuous channel. This form of filter presents a large filtering-surface, is simple in construction and operation, is durable and tight, and can easily be cleaned. Filtered or unfiltered water can be drawn without elaborate change or manipulation. When carbon is used for the filtering-body and said body becomes filled with impurities to such an extent as to interfere with its operation, the stay-bolt may be unscrewed and the filtering-body removed, whereupon such body may be placed in a fire or otherwise highly heated to have the organic impurities carbonized, and thus have their injurious properties destroyed, while the resulting carbon may even add to the usefulness of the filtering-body.

Other modes of applying the principle of my invention may be employed for the mode herein explained. Change may therefore be

made as regards the mechanism thus disclosed provided the principles of construction set forth respectively in the following claims are employed.

I therefore particularly point out and distinctly claim as my invention—

1. A filter composed of a hollow cylindrical filtering-body having a filtered-water outlet from its interior chamber, a cylindrical casing surrounding said body to form a space around the same closed at the ends and provided with a water-inlet at one side, and partitions in said space extending longitudinally in the same and alternately projecting from opposite ends to form a longitudinally-winding channel in the space around the body and on both sides of the same from the inlet, substantially as set forth.

2. A filter composed of a cylindrical casing provided with a water-inlet at one side and a waste-outlet opposed to said inlet, and a hollow cylindrical filtering-body fitted in said casing to form a narrow space closed at the ends and provided with a filtered-water outlet from its interior and formed with longitudinal integral ribs upon its outer side alternately extending from the ends of the body to a distance from the opposite end to form a longitudinal winding channel in the space around both sides of the body from the inlet to the waste-outlet, substantially as set forth.

3. A filter composed of a casing having a water-inlet, and a filtering-body within said casing formed with integral ribs upon its surface fitted within the casing to form a winding channel in the space between the body and casing, substantially as set forth.

4. In a filter, the combination of a cylindrical casing having a water-inlet and a cylindrical filtering-body within the same having a filtered-water outlet, said elements being separated from each other to form a narrow filtering-space by an annular shoulder at their ends making a joint and having an annular groove formed by the ends of said elements at their joint, a gasket in said groove, and a head bearing against said gasket to fill said groove and to tighten the joint, substantially as set forth.

5. In a filter, the combination of a cylindrical casing having a water-inlet and a cylindrical filtering-body within the same and having a filtered-water outlet, one of said elements having an annular shoulder at its end against which the other element bears and which spaces the body from the casing and an annular groove being formed at the ends of said body and casing in the joint of the shoulder, a gasket in said groove and tightly closing the joint of the shoulder, and a head bearing against said gasket to force the same into the groove and joint, substantially as set forth.

6. In a filter, the combination of a cylindrical casing having a water-inlet, a tubular filtering-body within said casing formed with annular shoulders at its ends each having an

external bevel at the end, gaskets bearing in the grooves formed between said bevels and the casing, and heads clamped against the ends of the casing and body to force the gaskets into the grooves and one of said heads formed with a filtered-water outlet from the interior of the filtering-body, substantially as set forth.

7. In a filter, the combination of a cylindrical casing having a water-inlet at one side and a waste-outlet opposed to said inlet, a tubular filtering-body in said casing formed with an annular shoulder at each end having an external bevel and with ribs longitudinally extending alternately from the shoulders at opposite ends to form a longitudinally-

winding channel in the space between the body and the casing, gaskets bearing in the annular grooves formed between the bevels of the shoulders and the ends of the casing, and heads clamped against the ends of the casing and body to force the gaskets into the grooves and one of said heads formed with a filtered-water outlet from the interior of the filtering-body, substantially as set forth.

In testimony that I claim the foregoing to be my invention I have hereunto set my hand this 20th day of April, A. D. 1899.

WILLIAM JANDUS.

Witnesses:

WM. SECHER,
K. F. WINDING.