

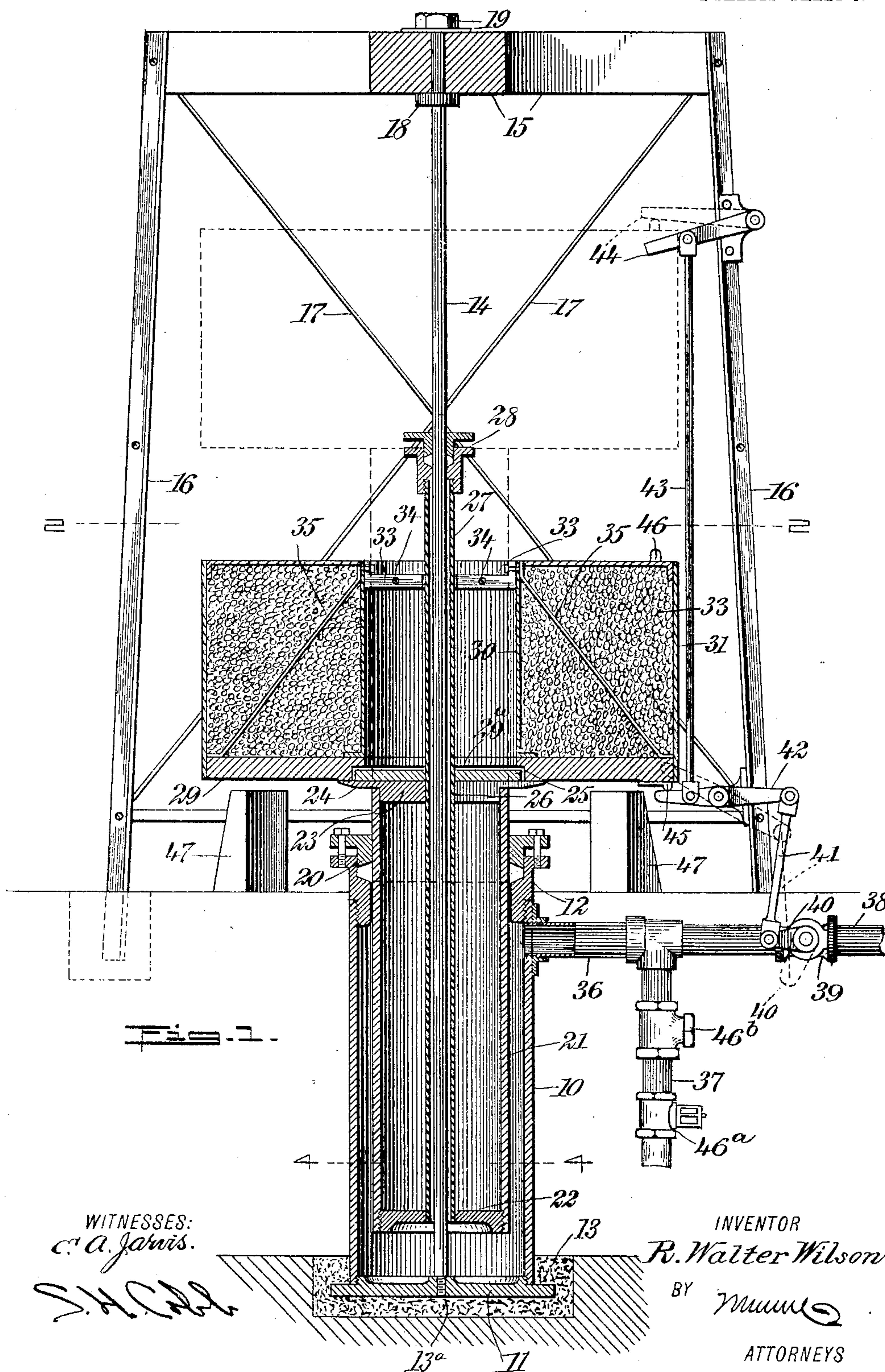
No. 803,383.

PATENTED OCT. 31, 1905.

R W. WILSON.
ACCUMULATOR.

APPLICATION FILED NOV. 18, 1904.

2 SHEETS—SHEET 1.



WITNESSES:

C. A. Jarvis.

S. H. Caldwell

INVENTOR

R. Walter Wilson

BY *Munn*

ATTORNEYS

No. 803,383.

PATENTED OCT. 31, 1905.

R. W. WILSON.
ACCUMULATOR.

APPLICATION FILED NOV. 18, 1904.

2 SHEETS—SHEET 2.

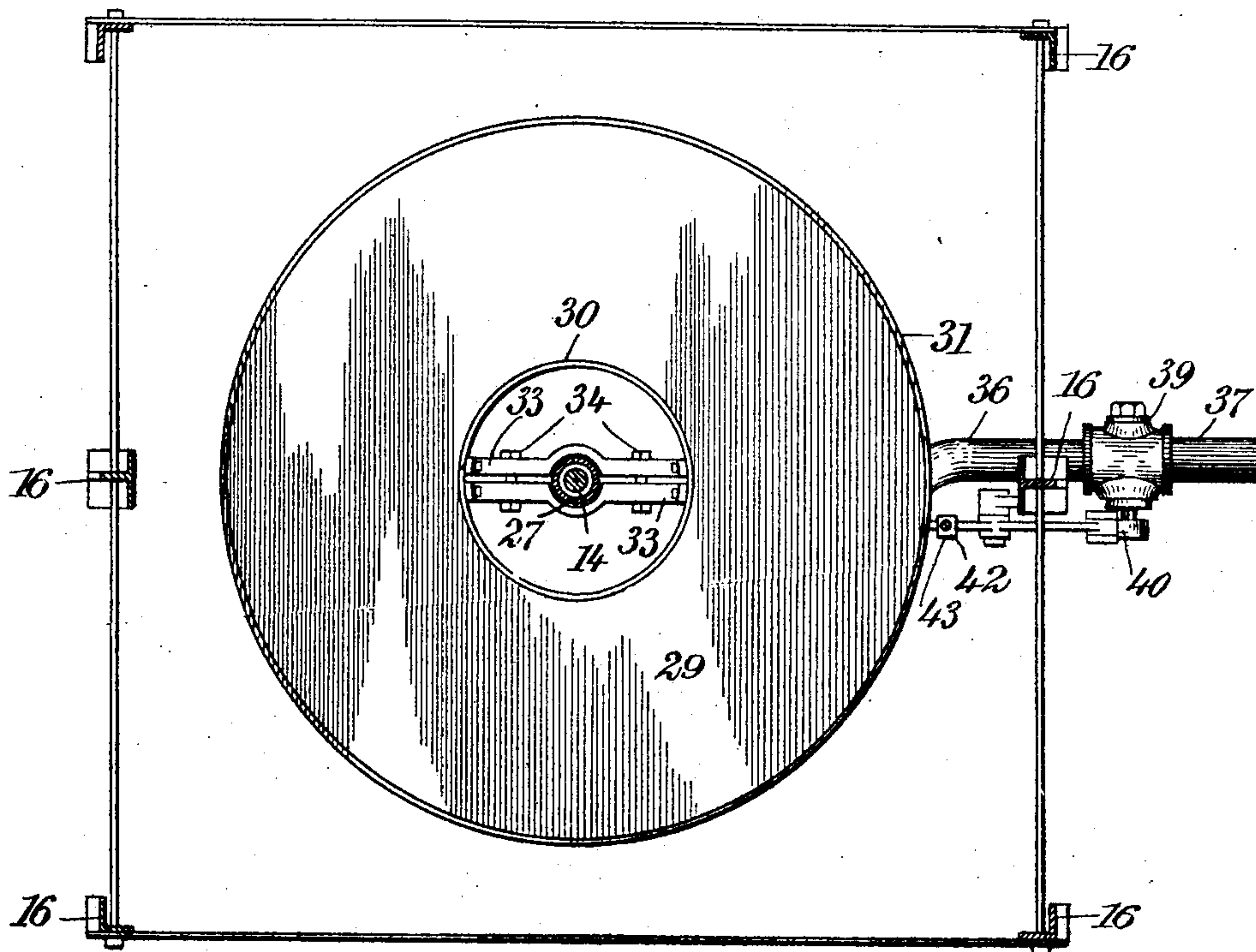


Fig. 2.

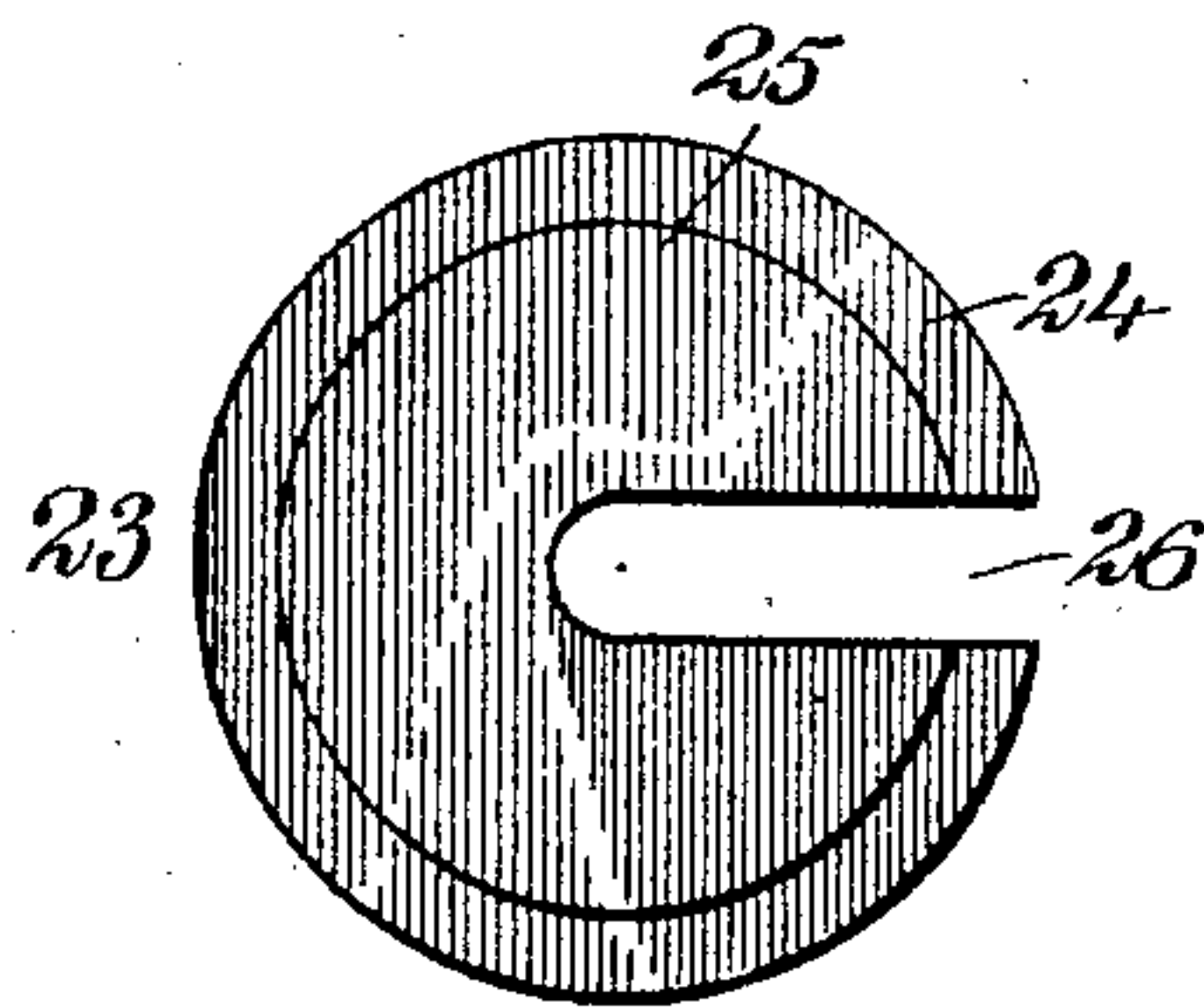


Fig. 3.

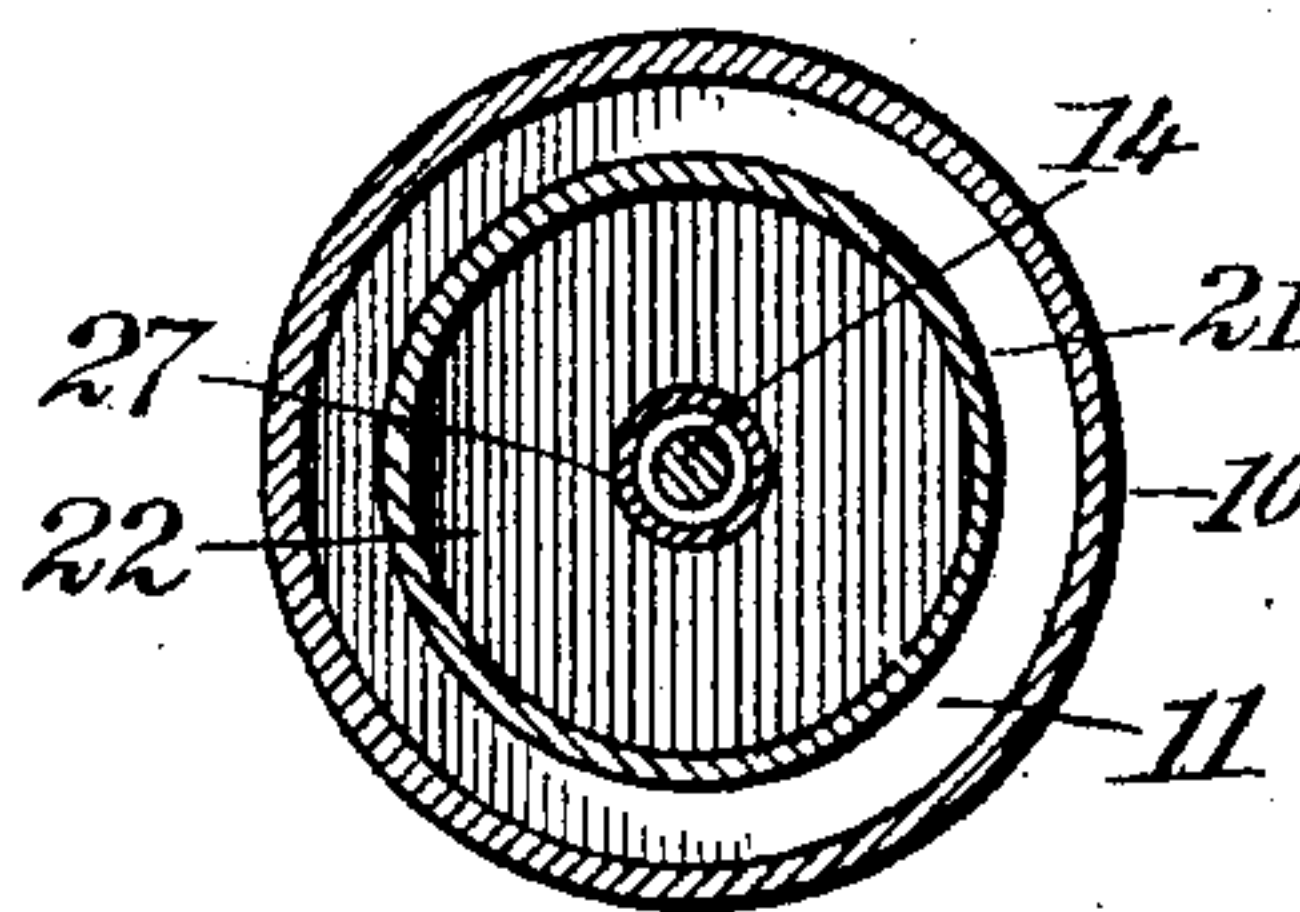


Fig. 4.

WITNESSES:

C. A. Jarvis:

S. H. Noble

INVENTOR

R. Walter Wilson

BY

Mumme

ATTORNEYS

UNITED STATES PATENT OFFICE.

R. WALTER WILSON, OF NOBLESVILLE, INDIANA.

ACCUMULATOR.

No. 803,383

Specification of Letters Patent.

Patented Oct. 31, 1905.

Application filed November 18, 1904. Serial No. 233,307.

To all whom it may concern:

Be it known that I, R. WALTER WILSON, a citizen of the United States, and a resident of Noblesville, in the county of Hamilton and State of Indiana, have invented a new and Improved Accumulator, of which the following is a full, clear, and exact description.

My invention relates to apparatus for storing energy and regulating its application, it being particularly adapted for use in connection with such motors of irregular speed as windmills which are applied to the pumping of water. Its principal objects are to provide automatic means for controlling the reception and delivery of energy by the accumulator and to generally improve the construction of apparatus of this class.

With these ends in view my invention consists in the various features and combinations hereinafter described, and more particularly claimed.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a central vertical section through one embodiment of my invention. Fig. 2 is a horizontal section therethrough on the line 2 2 of Fig. 1. Fig. 3 is a detail in top plan of the removable piston-head, and Fig. 4 is a sectional detail on the line 4 4 of Fig. 1.

In carrying out my invention I provide a fluid-tight receptacle, here shown as consisting of a preferably vertical cylinder 10, provided with a lower head 11, fitted into it, and an upper flanged sleeve 12. This receptacle or cylinder may be conveniently mounted upon a base 13, of cement or the like, surrounding the head 11 and the lower portion of the member 10. Fixed to the lower head, here illustrated as through a threaded end 13^a, is a rod or guide 14, extending through the cylinder and supported at its upper end in cross-bars 15, carried by suitable uprights 16, the frame thus formed being shown as braced by diagonal members 17. The rod may be connected with the cross-bars by a collar 18, fast upon it and contacting with the under side of the bars, and a nut 19, threaded upon its upper end. In some situations—as, for example, when the accumulator is set up in a structure which has a suitable ceiling or framework above it—the frame just described may be omitted and the rod joined directly to the inclosing structure.

At the upper end of the cylinder, here

shown as partially furnished by the sleeve 12, is a stuffing-box 20, and through this operates a piston consisting of a tubular member 21, having a lower head 22 and an upper head 23. This upper head is provided with a horizontal flange 24, and fast upon the head is shown a disk 25. These elements 23 and 25 are preferably slotted at 26, and through the slot passes a tube 27, surrounding the rod 14, secured at its lower end in an opening in the piston-head 22. The tube has at its upper end considerably above the cylinder a stuffing-box 28, closing its end and coacting with the rod to guide the connected elements.

Upon the upper piston-head is supported a weight, which is preferably in the form of a receptacle consisting of a base 29, having a recess 29^a to receive the disk 25, and thus prevent lateral movement, and inner and outer cylindrical walls 30 and 31, respectively. To provide a sufficient and variable weight, this receptacle may be filled with any desired material—indicated at 33 as consisting of relatively small pieces. Across the space within the inner wall and near the upper side of the receptacle extends a retaining member, which may consist of parallel bars 33 33, stayed by bolts 34. This retaining member fits somewhat loosely about the tube 27 to prevent binding. Support may be given to the outer periphery of the base 29 by braces 35, extending from it to the outer ends of the retaining members.

Connected with the cylinder is a conduit 36, with which communicates a supply-pipe 37, leading, for example, from a pump operated by a windmill, and a delivery-pipe 38, which may be connected with any desired fluid-motor. In the delivery-pipe is a valve 39, having its operating-arm 40 connected by a rod 41 with a lever 42, which, as illustrated, is fulcrumed upon one of the uprights of the frame. This lever 42 has pivoted to it a connecting-rod 43, which is also articulated to a lever 44, fulcrumed near the upper portion of the frame. Upon the lower and upper sides, respectively, of the weight are shown members 45 46, which may contact with the levers 42 and 44 in the movement of the piston.

Beneath the weight, with their upper faces situated in a plane just below the lever 42, are supports 47, upon which the base of the weight may be lowered, as will be hereinafter explained.

The lever 42 being in the position illus-

trated in full lines in Fig. 1 of the drawings, the supply-pipe will be connected with the cylinder, and the associated pump will force fluid into the cylinder. This will result in a
 5 raising of the piston carrying the weight, the travel continuing until the contact member 46 coacts with the lever 44, moving it upward, as is shown in dotted lines in Fig. 1. This by means of the connecting system operates the
 10 valve to open the delivery-pipe and connect with the motor, which is then operated by the fluid from the pump. As this may receive its power from a source of energy which is unsteady, at times it will not deliver as much
 15 fluid as is required to properly operate the motor. This deficiency is supplied by that stored in the accumulator, the weight carrying the piston downward into the cylinder and forcing the contained fluid through the de-
 20 livery-pipe. When the weight again approaches its lowest position, the contact member 45 strikes the lever 42 and restores the valve to its original position, when the accumulation of energy again begins. In case
 25 the pump runs at such a speed that it supplies more than enough water to operate the motor, and the cylinder being full, this excess is taken care of by safety-valve 46^a in the supply-pipe or associated with the pump. A
 30 check-valve 46^b may also be inserted in the supply-pipe to prevent the accumulator from forcing fluid back through the pump if it is not operating.

If for any reason it is desired to remove the
 35 piston, this may be effected by shutting off the supply and allowing the weight to fall by the lever 42 until its base rests upon the supports 47. Then the upper piston-head may be withdrawn laterally, its slot permitting
 40 this, and the piston may then be raised through the central opening of the weight, which is of sufficient diameter to allow its passage. To free the opening, the retaining member may be removed therefrom.

45 It will be seen that this apparatus will convert such variable energy as is furnished by a windmill into an absolutely steady and reliable power that may be applied successfully to any purpose, even for operating a dynamo
 50 or for other electrical work, and that the transformation will go on automatically without manual intervention. Moreover, the apparatus is strong, compact, and not liable to get out of order.

55 Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. An accumulator comprising a cylinder, a piston operating therein, a weight movable by the piston, a conduit connected with the

cylinder, supply and delivery pipes connected 60 with the conduit, a valve for controlling the flow through the delivery-pipe, levers situated at the opposite extremes of the path of an element movable with the piston, and means for connecting the levers to the valve. 65

2. An accumulator comprising a cylinder, a piston operating therein, a weight movable by the piston, a conduit connected with the cylinder, supply and delivery pipes connected with the conduit, a valve for controlling the 70 flow through the delivery-pipe, levers situated in the path of the weight at the opposite extremes of movement, and means for connecting the levers to the valve.

3. An accumulator comprising a cylinder, 75 a piston operating therein, a weight movable by the piston, a conduit connected with the cylinder, supply and delivery pipes connected with the conduit, a valve for controlling the flow through the delivery-pipe, a lever situ- 80 ated at each side of the weight, a rod connecting the levers, and means for connecting one of the levers with the valve.

4. An accumulator comprising a cylinder, a piston operating therein, a guide extending 85 through the cylinder, and a tube fixed to the piston and surrounding the guide.

5. An accumulator comprising a cylinder, a piston operating therein, a guide extending through the cylinder, a tube fixed to the pis- 90 ton and surrounding the guide, and a stuffing-box closing the opening between the guide and tube outside the cylinder.

6. An accumulator comprising a cylinder, a tubular piston operating therein, a guide ex- 95 tending through the cylinder and piston, and a tube connected with the opposite ends of the piston and surrounding the guide.

7. An accumulator comprising a cylinder, a piston operating therein, a guide extending 100 through the piston, a head carried by the piston and having a slot to receive the guide, and a weight supported upon the head.

8. An accumulator comprising a cylinder, a piston operating therein, a guide extending 105 through the piston, a head carried by the piston and having a slot to receive the guide, and a weight supported upon the head and having an opening in alinement with and of greater diameter than the piston. 110

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

R. WALTER WILSON.

Witnesses:

H. B. TUCKER,
MEADE VESTAL.